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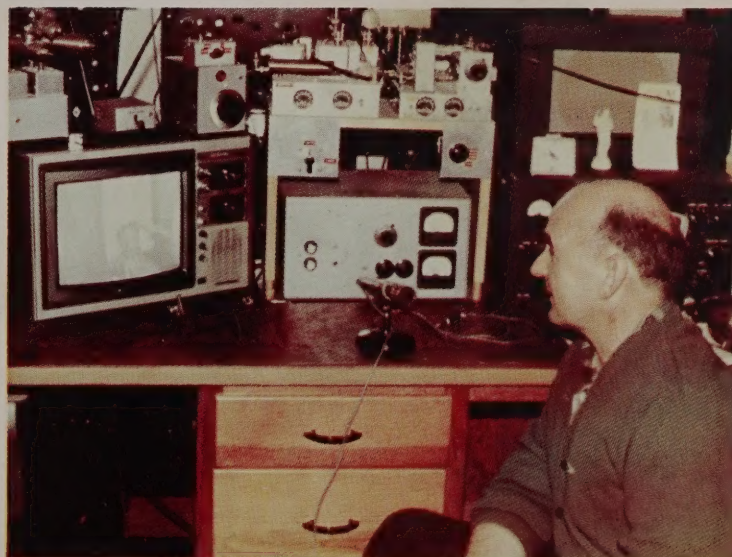
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EXPANDED ISSUE!

- A5 Photo Contest!
- New ATV Book Released
- Mobile ATV and Color Cameras
- Simple Homebrew ATV Preamp!
- Cures for FSTV Sound Problems
- CA-1 On-carrier Sound for PC
- Looking Back at Old A5's
- FSTV Contest!
- How A5 Magazine Is Put Together
- TVRO - Part 3 70 Mhz. IF
- TVRO - Part 3 1 Ghz. Oscillator
- International SSTV DX Contest!
- A5 Visits KW Control Systems
- Colorscan 403 SSTV Converter!
- More of Clay Abrams K6AEP
- New Apple SSTV Program!
- Motion SSTV for Robots KB9MC
- FAX! FAX! FAX!
- VHF Rtty Group Updates
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In Review

Fifty-seven entries were received from our February 13th and 14th "A5 Magazine Worked-All-States SSTV Contest" which was quite a success both in the number of participating stations and the unique design of the contest in general. The emphasis was on "having fun" rather than the usual "fight for the frequency" type of contesting. Official results, pictures and comments will be in our June issue, but rather than keep the su-

sense going, we will announce the top finishers here; 1st place went to Luis Chartarifsky XE1LCH of Bosques de Las Lomas, Mexico, 2nd place to Roland Soucie N6WQ of Costa Mesa, California, 3rd place to Larry Benson K9KQO of Peoria, Illinois, 4th place to John Hudak III KA3X of New Castle, Pennsylvania and 5th place to last year's winner Harry Harchar W2GND of Hightstown, NJ. A complete listing of the top ten winners with scores and comments will be listed in the next issue! Congratulations winners! As we gear up now for our "big" International DX SSTV Contest July 17th and 18th and a new UHF FSTV Contest in August, we certainly recognize A5 is alive and well today! Some of the comments that came in on the SSTV contest were that they were glad to see plenty of advanced publicity in other Amateur publications (we were in QST, 73, CQ and Worldradio), and that our type of format was enjoyable to work rather than a struggle as in the 73 sponsored contests. The recent 73 contest was virtually "dead" with little activity even on the peak periods on twenty meters at 14.230 Mhz. Monitoring of the entire weekend of that contest showed little participation and a gross amount of unawareness by SSTV operators (even 73 magazines' own contest listing didn't run it). It proved to us at A5 ATV Magazine, that the format used for our contest assures participation and enjoyable operation. This issue of A5 ATV Magazine is undoubtedly "the best issue" ever published in 15 years! We went all out in this issue to give you top articles on all modes of the Amateur Specialized Communications and a full-color front cover and dealer advertising. This has got to be the most expensive issue to date printed and is a "thank you" to you the subscriber for having faith in us through the changeover period in supporting the now monthly format. Extra copies have been printed, so tell your buddy who doesn't subscribe that he had better get a copy of this one as it will become a "collectors" item for sure! It's about time Henry B. Ruh and Jeremy Royale get officially recognized and awarded for their accomplishments. They will be presented with their awards at this year's Dayton Hamvention. Congratulations! For those of you who are wondering what all those crazy pictures pasted together are on page seven, they are pictures of past publicized ATV'ers within the past two years issues. A one-year subscription will be awarded to the individual who can correctly identify the most people either by name or callsign. In case of tie, the earliest postmark wins! Get out those back issues gang, and start searching! Some article "highlights" to watch for is Syd Hornes new "Colorscan 403" SSTV Converter, Gerard Wilson's Part-3 TVRO, Clay Abrams insight to the future for microprocessors, a fantastic new "Apple II" computer program for SSTV and our beginning regular coverage of Facsimile with Robert Roehrig. Thumbing through some old back issues of A5, I discovered alot of good material that needs to be republished for us "new" kids, and so a "history" section will be added reguarly. How is your subscription arriving? Are you getting them on or before the 1st of each month? They are being mailed now 3-weeks ahead of the intended month and I think it is working out just great with few exceptions. We enjoyed putting together an "inside glimpse" of what takes place to make up the "rag" before it gets to your doorstep. A "Central-States UHF ATV Conference" is being put together for this September at the Peoria, Illinois Superfest-watch the next issue! 73's de WBØQCD

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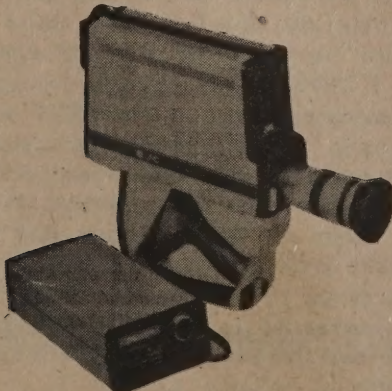
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"Letters To The Editor"

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"I am well pleased with the new format of A5 Magazine especially the addition of Rtty. The Rtty Journal has sort of been dying on the vine so to speak and am glad to see A5 taking over. I would be interested in doing a "users report" on the Datapro UT-4D board if you would be interested." Vince Staffo WB2FYZ Editor-Send your article! We plan to devote a regular section to Rtty with each issue but ATV (SSTV etc.) is our 1st love!

"Now that Facsimile is legal to operate in the HF bands in the USA, we are very anxious to see the F4 signals beamed our way for contacts. The Japan Amateur Facsimile Association has been quite active here and we are very anxious to meet U.S. Amateur Fax operators. Our popular JA Fax units are called Pana 1000, 2000 or 3000 series transceivers. I hope U.S. Fax standards will be comparable and compatable." -Hisataka Sumioku, JA2OL, 1560 Kamiokamoto Takayama City, Gifu, Japan.

"Thank you for your support and getting the word out about Facsimile operation. I was very pleased to read about the suggestion of HF Facsimile frequencies in the March issue and hope to get active once again myself. I will keep in touch and submit Fax reports and articles." -Robert Roehrig K9EUI, 314 S. Harrison, Batavia, Illinois 60510.

"First off, I would like to say that I do not operate SSTV but am thinking along those lines since the recent announcement of new privileges for Generals in the HF bands. Thanks to Henry Ruh and A5 ATV Magazine for getting it through the FCC! I agree in general with the proposed frequencies listed in the March issue. I do, however, have a few reservations if the frequencies allows enough room for operation? I think an entirely different frequency should be chosen for 10 meters for many reasons including crystallized up converted CB rigs that land right on frequency. The large number of low powered operators like myself have been ridiculed off the low end of the phone band. I wouldn't want to see those individuals coming up where I might be operating SSTV." -Richard Edwards KA5 ALO Editor-Thanks for your letter Richard, there is alot of feeling that even the 28.680 frequency is getting QRM'ed more often and dwindling in respect for SSTV operation. Surely, with the movement off ten meters upward into other General bands will lessen the strength in numbers theory for maintaining that frequency. Even with a proposed January 1983 target date of higher band operation, I hesitate to lose a pretty well established calling area. The abandonment of 28.680 would I feel do more harm than good. Only time will tell what develops. -QCD

"I am interested in getting into SSTV but do not have the \$\$\$ that it seems to take to get on the air with the expensive equipment. Can anyone around the Omaha area give me some helpful sugesstions?" -Thomas Klamt KA0ELO 7102 South 53rd Street, Omaha, Nebraska 68157.

"The Westlink report newsletter reported that 14.340 and up should be used for SSTV in the General bands. There are alot of nets that operate in that area including our net at 14.345 Mhz. Please, no QSY up for SSTV!" -Lloyd WA8ZEO Editor-Sorry Lloyd, you didn't mention what net or give a return address for me to answer you directly. SSTV'ers sacrifice legal operation within an entire band so not to QRM others and ask only for a small segment that thousands of operators huddle around. I have no mercy for any further possible interference around SSTV calling areas. Like the RTTY boys, gentlemen's agreements are what makes things liveable within the Amateur Bands and it is ashame that all can't honor those agreements.

"Keep SSTV off 3.990 Mhz as that is where our West Virginia Phone Net is conducted!" -Bob Yound W3NWA, 39 Corson Road, Conshohocken, PA. 19428 Editor-I'll be sure to tell thousands of SSTV operators that because of one social net-3.990 is hereby cancelled and they cannot operate SSTV any where within the 80 meter band because someone else uses the frequency. (Share-share-share).

"We have updated the JA0BZC SSTV Scan converter with many mods as on your Robots including even Color with 3 memories. If you would be interested, I would be glad to ask designer Dave Cowie ZL1 LH to give A5 the details for others who have built up the unit? All PC boards for the JA0BZC unit are available from him (see March/April 1980 issue)." -John Wilson VK3LM, 14 Merrilong Street, Ringwood East 3135 Victoria, Australia.

"How about some Robot 800 Mods?" -Dan WA2KOK Editor-Any mods out there? WB0QCD

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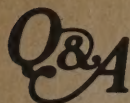


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Q. "I am new to FSTV. I see some areas using vertical and some areas using horizontal polarization. What type should I use?" A. Various studies done by the government show that on UHF frequencies it doesn't really

make any difference which polarization is used. The factors you should be concerned with are 1. what is being used in your workable operating area and 2. do you intend on working a TV repeater someday? Many east coast and midwestern states utilize horizontal polarization in non-repeater areas. Going horizontal provides a few benefits in that TV DX'ing can be monitored with the ATV antenna system since the commercial broadcasters use the horizontal TV polarization and interference from Amateur or business broadcasters is reduced due to the degree of out of phase operation. There are claims by those using horizontal that better DX is achieved with minimal band fade but that can be argued both ways. Another big advantage to the horizontal mode is that other modes of operation such as 432 Mhz. SSB/CW and Oscar Satellite work can be accomplished usually with the same system dependent upon the bandwidth of the ATV antenna system. Vertical polarization, however, is most prevalent in larger areas where TV repeaters are in use. Antennas are easier to find vertically polarized especially in mobile or portable work. The "best" of both worlds can be achieved sometimes by going horizontal if close enough to still put in a strong signal into the local repeater and still work DX. The best bet is to look around you for a couple hundred miles and see what others are doing.

Q. "What is on-carrier sound with ATV?" A. On-carrier sound is the modulating in FM of the video carrier signal or mixing the video with audio so to speak. It does not then come out the receiver's TV set and a separate receiver must be used to hear it. It does involve the addition of more equipment in the shack and perhaps even another antenna system but much longer DX distances can be heard with the on-carrier sound. It is not uncommon to communicate over 200 plus miles with 50 watts and a good antenna system long before the level of video shows up on the TV screen. It is nice to have both sub-carrier and on-carrier sound for the ATV setup.

Q. "What are the biggest obstacles a newcomer must overcome on FSTV?" A. LOSS! At UHF frequencies, everything you can do to reduce the loss in the overall system is vitally important. Proper connectors such as BNC or Type N instead of PL-259's, Belden 8214 and hardline coaxial cables, preamplifiers ahead of the downconverter and TV set, high-gain antennas are but a few ways to ensure low-loss. Every step in this area is almost detectable on receive and on transmit quality. If your new at these frequencies, visit your active 432 SSB'er or EME'er, and see what they have done to accomplish their success in the same band areas.

Q. "I have a good antenna system for FSTV and use hardline cable with low swr. I also have preamps ahead of the downconverter but still cannot see anybody over 30 miles. What could be my problem?" A. If you are not in a real "hole" or next to a high hill or other obstruction that could be impairing your signals from getting through, have you tried playing with different TV sets? The TV set is the most common piece of ATV equipment that is very often overlooked. IT IS YOUR RECEIVER! It is very easy to get that ole' set upstairs in the kids room or the one that was retired from service years ago to use for your TV receiver. Beg or borrow another TV set (AC/DC) and check for different results. Real bargains are found at Drug and Discount stores from \$59-89.00 on Korean or Japanese "hot" front end transistorized sets. One should never cease hunting for a "better" TV set.

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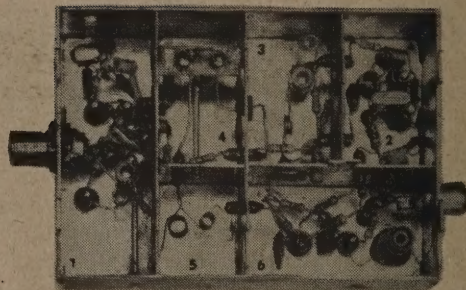
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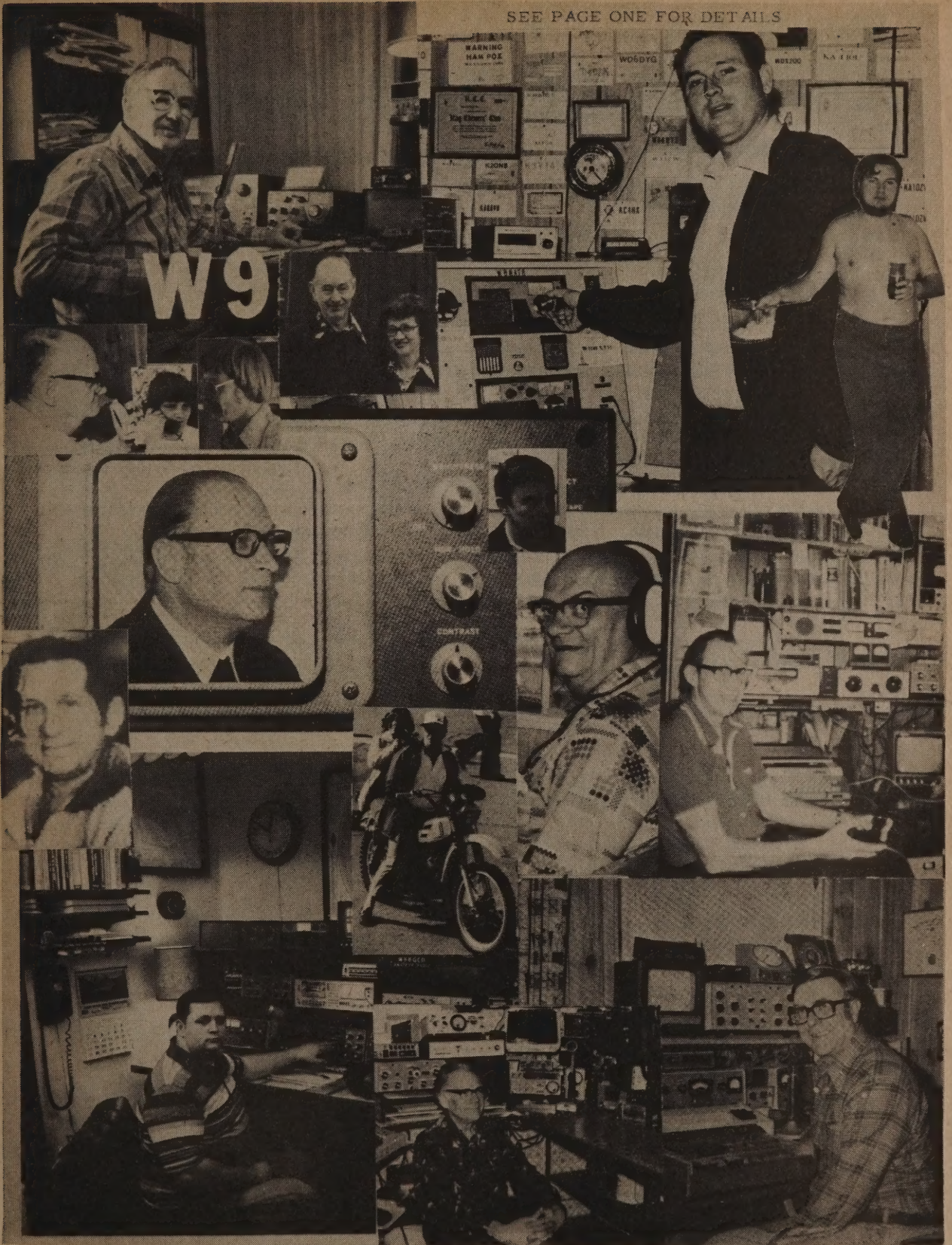
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SEE PAGE ONE FOR DETAILS





SE-1a UHF ATV TRANSCEIVER:

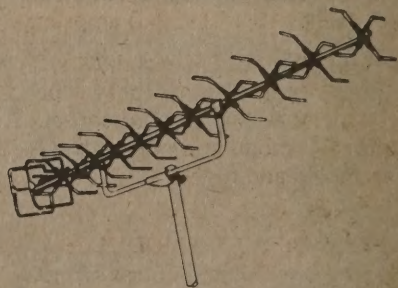
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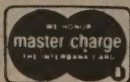


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A-2 4.5MHZ AUDIO SUB-CARRIER — Accepts audio from VCR or GLB audio processor to provide ATV audio on TV set. Has on-board voltage regulator and shielded inductor. 2 3/4" x 1"; \$18.95 kit, \$24.95 assembled.

SA-1 VIDEO SYNC AMP — Provides separate video sync gain control for VM-2 above or SE-1a transceiver. Useful when driving solid state amps. 1 3/4" x 1 1/4"; \$14.95 assembled, \$11.95 kit.

DC-1 UHF CONVERTOR — Varactor tuned with 2 RF stages. MRF901 input standard. Double sided stripline design. Outputs to TV ch. 2, 3 or 4. Can be tower mounted. 11 — 14vdc. 2" x 3". \$34.95 kit, \$49.95, assembled, \$79.95 complete in box. Add \$15.00 for NE64535 1st stage.

P-1 WIDEBAND LOW NOISE UHF PREAMP — Uses MRF901 transistor to provide 16db gain and 1.7db noise figure. Covers 420—450MHZ band. Other frequencies received with change in input inductor. 2 1/4" x 1 3/8"; \$17.95 kit, \$26.95 assembled. Add \$15.00 for NE64535 Option.

LA-1 UHF AMPLIFIER — Uses 15 watt MRF641 transistor with 7.8db gain @ 470MHZ. Stripline inductors with on-board pin diode antenna switching for a receiver. Designed for wideband color video with exciters such as the GLB T450L that provides up to 3 watts drive. Drilled and tapped heatsink included (4 1/2" x 1 3/4"). 1 to 3 watts drive typically gives 6 to 18 watts output. 12 — 14vdc operation @ 4 amps max. Double-sided board is 4 1/2" x 2". \$69.95 assembled with test data.

LA-45 UHF AMPLIFIER — Uses MRF646. Input power of 6-15 watts typ. gives 20-50 watts output. Biased for linear operation. Kit includes all parts, instructions and 4.2" x 3" double-sided stripline board. Needs 12-14 vdc @ 9 amps max. \$59.95 kit.

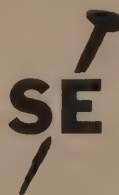
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ADAPTING THE COLOR CAMERA FOR MOBILE OPERATION

E.G. "Mike" Silvernail, WB4ENJ

The color video cameras now available are a real boon to ATV enthusiasts. It wasn't so long ago that the best that we had available were large, bulky tube type black and white models that were tied to the AC cord.

In the late 60's, 73 Magazine introduced many ATVers to solid state cameras with a construction article on a miniature (in those days) TV camera. With the aid and assistance of Harry, K2PTH, Denny, (then) WB2RAE, and I undertook that project. It was several months of frustration from the time we first started winding deflection coils that we managed to see a slight flicker of light on the screen when we held a match in front of the lens.

Today, my Panasonic PK-801 color camera is smaller, has a motorized 6 to 1 zoom lens, built-in 1" viewfinder and microphone, and uses less power. Besides that, it makes excellent color video in less light than that early B/W camera required.

For mobile or portable operation, I use a small box that interfaces the camera to the SE-1a transceiver. Since it outputs with standard video and audio, the interface box should adapt to other ATV transceivers suitable for DC operation.

The box provides the following:

- Standard video output, 1 volt p-p.
- Low-impedance audio with adjustable level.
- Push-to-look capability using the pause trigger on the camera.
- Regulated 12vdc to the camera to protect it from surges and spikes.

Most color cameras have a multiple conductor cable which is terminated in a 10 pin connector. Besides common ground, the connector inputs DC voltage to the camera and outputs video, sound and pause control. It is designed to connect directly to mating connectors on portable video cassette recorders. For AC operation, a small power supply usually is offered which accepts the the 10 pin connector. Fig. 1 shows the pin-out for the 10 pin camera connector found on most cameras used with VHS type video cassette recorders such as Panasonic, RCA, Sylvania, etc.

The circuit for the interface box is shown in Fig. 2.

The 10 pin female connectors can usually be obtained thru shops that service the video cassette recorders.

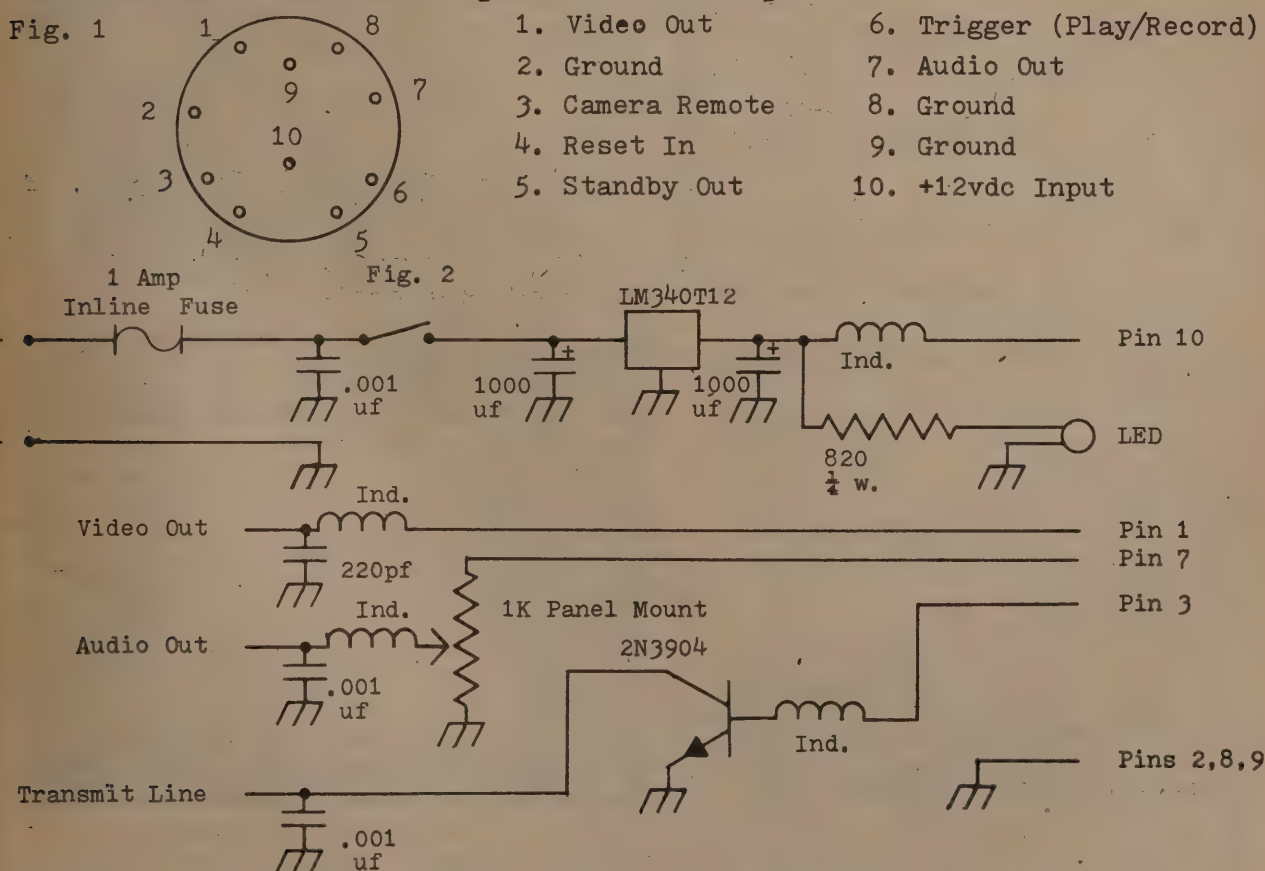
VHS cassette recorders that I have worked with are paused when the remote/pause line is grounded. It is high for play. The opposite is needed for the SE-1a mic transmit circuit. Q1 inverts the camera trigger button so that the SE-1a will transmit when the camera indicates record mode. The audio and transmit lines connect directly to the mic plug.

Audio level is controlled by the 1K potentiometer. Normal operating level can be marked, but the control allows for varying the level for different conditions.

The inductors and bypass capacitors on the lines going to the camera are there to discourage any RF that may want to feed back thru those lines. The inductors are 10 turns of #24 enameled wire close wound on the shank of a 3/8" drill.

The color cameras have an internal voltage regulator for stable operation. The one in my Panasonic model is for 9 volts. The 12 volt regulator in the interface box regulates the input voltage and stops any voltage spikes that may be in the automobile electrical system. My camera draws about 625 ma. at 12vdc, so the TO220 cased LM340T12 was selected for ease in mounting and and current capacity. Even though the regulator is fixed at 12 volts, the input can vary between 11.5vdc to 15.5vdc and still provide stable performance from the camera. This is due to the internal regulator in the camera. Check the current requirements of your camera. If it exceeds the 1 amp capacity of the LM340T12, select a regulator with a higher current rating.

The price of color cameras has dropped in the past several years, with some being advertised around the \$500 figure. These still offer electronic viewfinder and zoom lens. Some excellent used color cameras are starting to show up at the hamfests at even lower prices. With the interface box, these cameras can be taken mobile/portable to add another dimension to your ATV activity.



- Notes:
1. Connectors to transceiver can be BNC, RCA, etc.
 2. Use coax for connections to/from interface box.
 3. Capacitors should be 16vdc or higher.
 4. Inductors are 10 turns #24 enameled wire closewound on 3/8" drill shank.



W9BPX Sam Williams, Chatham, Illinois 20 watt ATV signal 100 miles, K9KKL Bill Bryant, Springfield, Illinois 100 watt signal 110 miles, N9KD Roby Robinson, Springfield, Illinois 100 watt signal 100 miles (photos 3 & 4) all received by Dave Williams WB0ZJP, St. Louis, Mo. WB0QCD Mike Stone, Lowden, Iowa FSTV 35 watt signal depicting P-1 copy to KA0BVT in Moscow, Iowa 23 miles, K9ZFK Orville Vogelbaugh, Moline, Illinois as seen on W9ZIH's TV in Chicago, Illinois.

The "Midwest ATV Net" meets weekly on Saturday at 11 am. CST at 7.290 Mhz.

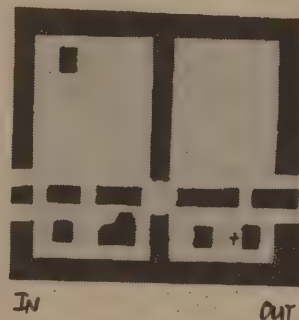
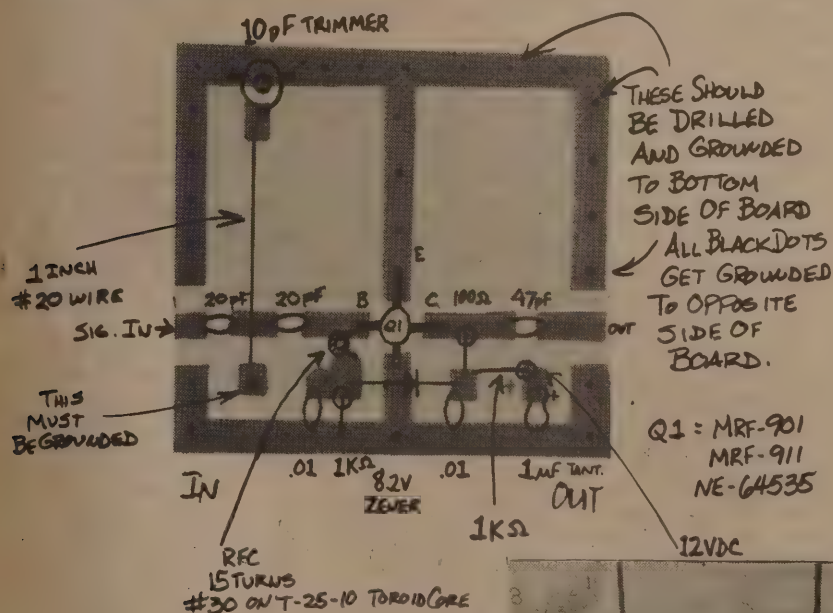
SIMPLE "HOMEBREW" ATV PREAMP

by Dave Williams WBØZJP

The name of game is "sensitivity" in ATV work. Here is a simple little preamp circuit that can be used in FSTV downconverters or as a "boost" ahead of the TV receiver. The Q1 transistor used in this circuit can be the popular MRF-901 or other transistors may be used for higher gain such as the MRF-911 or "hot" NE-64535. A double sided board can easily be made with a straightforward design in layout for components. Bob Wilson WBØRTM, 205 Elm Street, Van Horne, Iowa 52346 (see ad) has made up boards available for this circuit with parts stocked and available by THE PARTS STORE, 999 44th street in Marion, Iowa 52464 (see ad). Grounding is very important to this circuit as shown on the diagram below on outer edges and the island at the bottom left going to the 10 pf trimmer. The circuit is powered by 12 vdc (very little draw current) which is easily found in the ATV unit itself or can be picked up within the TV set. Testing of weak on-the-air signals at 439 Mhz. in the St. Louis area beaming toward Springfield, Illinois (K9KKL) proved without a preamp circuit in line the copy would not be there at all. Enjoy your new amplifier and "see you on ATV"! Dave Williams WBØZJP, 5501 Holborn, St. Louis, Missouri 63121

20pF - 2 .01µF - 2 1000Ω - 2
47pF - 1 1µF TANTALUM - 1 100Ω - 1
10pF TRIMMER - 1 8.2V ZENER - 1

BOARD IS DOUBLE SIDED G-10 OR EQUIV.

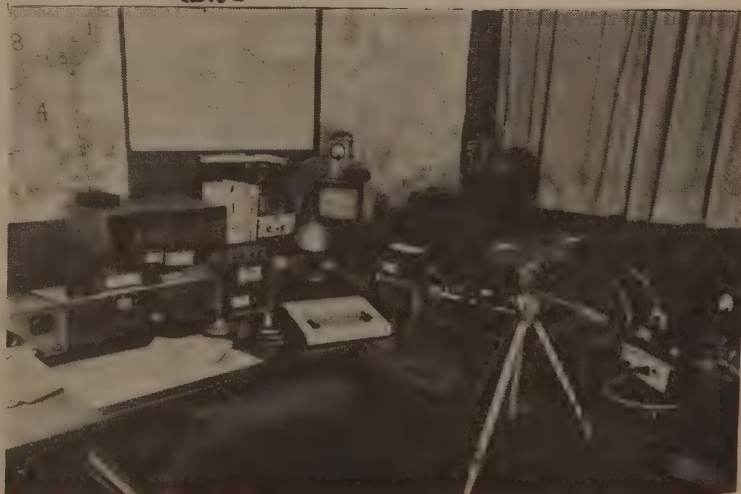


A5 MAGAZINE'S "SHACK OF THE MONTH" DAVE WILLIAMS WBØZJP

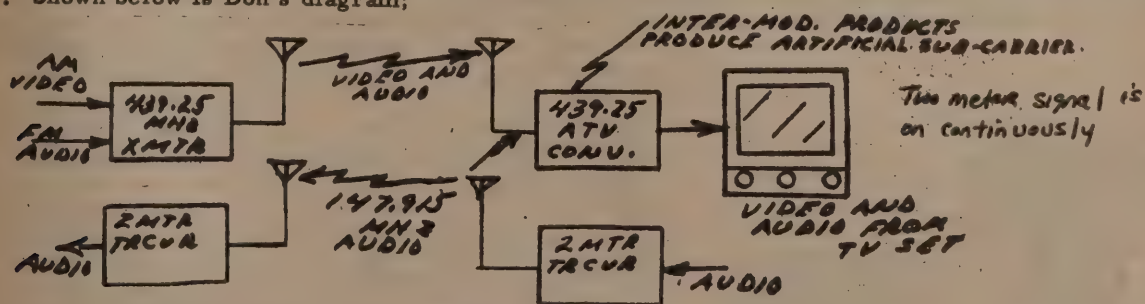
A mixture of Heathkit, Kenwood, Infotech, Hallicrafters, Infotech, Dentrion and PC Electronics Gear.

HF/VHF/UHF CW/SSB/RTTY/FSTV

Send Your Shack Photos to A5!



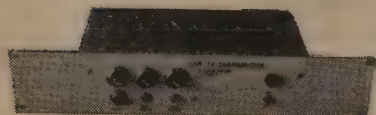
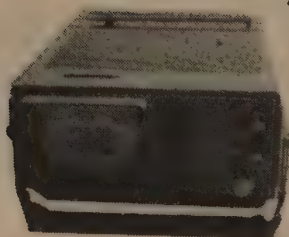
It is not necessary to install a whole new feedline and antenna system for a separate on-carrier monitoring system (although some do). By use of switching devices that properly take the receiver in and out of line (to prevent overload and the blowing of the front end of the second receiver), a maximum coverage monitoring system can be employed. UHF FM rigs such as Regency's HR-440 and a host of other systems can be utilized and even added to give another capability to the multi-mode operator. Stations using "vertical polarization" for ATV work have excellent 450 Mhz. FM capability limited only to the broadband-ness of the antenna system. Those using "horizontal polarization" have 432 Mhz. SSB flexibility with the proper rig. Popular Scanners as pictured above, are often used for the on-carrier receiver and usually need to be preamped for maximum sensitivity. They can be programmed to pick up the audio on-carrier signal as well as the video carrier (great for retransmitting back to the sending station for antenna alignment) and other ATV frequencies such as for the audio sub-carriers (4.5 Mhz. away) or even distant used TV frequencies in other areas. One of the hottest new rigs to just enter the market perfect for for ATV'ers is the ICOM IC-490A. It is a specially designed, 10-watt FM, SSB, CW all-mode transceiver with coverage in the 430-440 Mhz. range (finally!) and with a modern programmable scanning system including four memories and two priority overrides! This unique rig, can be programmed to lockup on a 439.25 Mhz. video or audio signal in the priority position for instant band activity alert. The scanning capability gives the ATV operator a number of monitoring options useable with the installed ATV antenna system (Linears too!). The ICOM IC-490A will be the most talked about transceiver designed ideally for the ATV operator (also STANDARDS' model C7800 see photo). For many year's, midwestern ATV'ers have been using on-carrier methods successfully covering hundreds of miles and several states routinely. The "audio" will come through long before the video signal pops through on the TV screen which gives not only a nice mode of voice communication among distant ATV stations that don't always see each other and a band propagation indicator for achievement of video contacts. Two-meter FM Other bands can also be utilized for audio ATV communications such as two-meters-preferably on 146.43 Mhz. (standard) although this also will vary around the country (see ATV activity listing within this issue). Don Miller W9NTP suggested in an Indiana ATV Newsletter and March/April Volume #10-2 issue of A5 ATV Magazine, that 147.915 Mhz. might produce some interesting results in non-desensing two-meter key-up "duplexing" of a 439.25 Mhz. signal on ATV. $439.25 \text{ plus } 4.5 \text{ Mhz. (sub-carrier) divided by three equals } 147.915$. While receiving a 439.25 Mhz. ATV video and sound signal, key-up on 147.915 and a non-desensing of the TV picture with sound duplexing capability exists* (dependent upon proper antenna separation and strong UHF signal source). This is producing the same effect as using a "grid-dip oscillator" near the TV set to fool the TV set into thinking an audio sub-carrier is being sent. (41.25 Mhz. carrier nearby sometimes will work). Shown below is Don's diagram;



No matter what method is employed for ATV sound communications, it is imperative that you always show on the TV picture just where you are sending and listening for audio. Stations have been received in the Chicago area from Indiana and Ohio on "video" during DX openings, yet were never contacted even by LL because the sending station did not insert call-letters, location and what frequency sound was being transmitted or received. Consideration of sound capability is important when purchasing ATV kits or assembled units. An ideally switchable "sub-carrier, on-carrier and off" position system incorporates the most flexibility for the ATV operator. Please send your area's video and sound frequencies used to A5 ATV Magazine for publishment and good luck on Amateur Television! See you on the Saturday morning FSTV Net on 7.290 Mhz. at 1700 GMT.

P.C. ELECTRONICS

SEE US AT DAYTON BOOTH 71



D1010

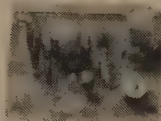
MML432-50



DM-1



TVG-1



TVG-12



NEW

5" COLOR AC/DC PORTABLE TV/MONITOR\$299ppd

Liberty model 5010 has video and audio inputs and outputs. Use as a color video monitor, standard TV, VCR tuner, or repeater receiver. Operates on 117vac, external 12vdc, or internal D cell batteries (not supplied). 12 x 12 x 6"

TVX-1 TELEVISION TRANSMITTER\$500ppd

This is a complete 10 watt UHF TV transmitter in a 3 1/2" high 19" rack panel intended for community television outside the USA. Available on *TV channels 14 thru 20 or on ham ATV frequencies. Takes baseband video and line level audio input from a TVRO, VCR or camera. Also a mic input for voice overs. 117vac 60 hz supply. Monitor output. 4 to 6 week delivery depending on frequency.

*Only ham freq. available for use in USA.

D1010-N MIRAGE ALL MODE 100 WATT AMPLIFIER....\$299ppd

420 to 450 mHz, FM, SSB, CW, and ATV. Up to 90 watts pep on ATV with only 4 watts drive. Req. 13.8 vdc reg. at 20 amps. Uses "N" connectors. 12" x 3" x 5 1/2". Specially modified by us for ATV.

MML432-50 MICROMODULES 50 WATT AMPLIFIER...\$269.95

+ UPS

All modes, builtin low noise preamp, 5 in/40 pep out on ATV. Req. 13.8 vdc reg. at 8 amps. BNC connectors. 11" x 5" x 2.2". Charge card or COD only on this unit. Requires sync stretcher added to TXA5 Exciter.

DM-1 RF/VIDEO DETECTOR & MONITOR.....\$20ppd.

Samples RF off xmtr coax and outputs 1 v p-p video to monitor your own camera and setup. Also outputs to a external 50 uA meter for relative power. Req. +12 to 18 vdc at 25 ma. PC board only\$ 5ppd.

TVG-1 and TVG-12 ATV TEST GENERATORS\$15ppd ea.

Connect your camera and you have about one milliwatt on the air for demos, ant tests, or receiver alignment. Req. 9vdc at 7 ma. TVG-1 tunes 400-480 mHz and TVG-12 tunes 1200-1300 mHz.

TSQ-1 TV S-METER AND SQUELCH BOARD\$5ppd

Add common or Radio Shack parts, tap into TV's video IF AGC line, break one speaker lead, and you can better align the antenna, give relative signal reports, and have no noise between contacts.

VIDEO SPECIAL AFFECTS:

Family of plugin cards designed to superimpose characters, supply external sync, and other effects to be added later. Start your effects cardage now with the VDM-3 and VID-3. A must for repeaters!

VDM-3 VIDEO DISPLAY MIXER 2 camera switcher, superimpose mixer, V & H drive outputs, and raster gen.....\$69ppd

VID-3 VIDEO IDENTIFIER Superimposes call or any 6 letters in camera video. 1 programmed PROM included. Works with VDM board....\$69ppd

IDS-3 ID SEQUENCER steps thru up to 5 PROM ID memories to show call, city, CQ, repeater, etc\$49ppd. PROMS \$15 ea.

CBG-3 COLOR BAR & PATTERN GEN. Uses 16 pattern MM5322N chip. Camera & gen video switcher, xtal controlled, many features.....\$99ppd

AIM-3 AUDIO & ID MIXER. Mix & remotely switch or attenuate 4 audios & programmed MCW ID. Line & .4W speaker outputs\$69ppd.

CALL 8am-6pm M-F

TOM W6ORG P.C. ELECTRONICS • 2522 PAXSON LANE • ARCADIA, CA 91006

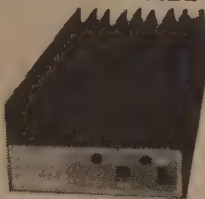
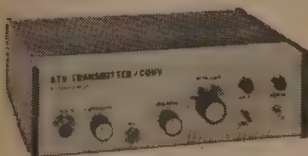
(213) 447-4565

1-82

WHY GET ON FAST SCAN ATV ?

- You can send broadcast quality video of home movies, video tapes, computer games, the shack, etc., at a cost that is less than slowscan. Requires only a technician class or higher.
- Really aids public service communications for parades, RACES, CAP searches, weather watch, marathons, etc.
- DX is about the same as 2 meter simplex - 15 to 100 miles.
- ATV uses broadcast standards. No special converters needed. Receive full color and sound on a regular TV set.

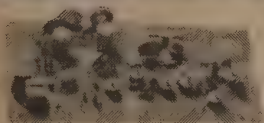
TC-1 TRANSMITTER/CONVERTER ALL IN ONE BOX READY TO OPERATE \$ 399 delivered U.S.



Plug in camera, antenna, mic, and TV set and you are on the air. Contains the 4 basic modules, AC supply, and T/R switch. Full color and sound. Specify xmtr freq and TV ch 2, 3, or 4.

MIRAGE D1010-N modified for ATV . . \$ 299 delivered U.S. Runs 90 watts p.e.p. on atv. Requires sync stretcher in exciter. Add \$20 if you would like us to match the TC-1 to the D1010-N.

Build Your Own System with The Basic Four Modules



1. TXA5-4 ATV EXCITER/MODULATOR \$ 89 ppd

This wired and tested module is designed to drive the Motorola MHW-710 module in the PA5 10 watt linear amp. The crystal in the 100 mHz region keeps harmonics out of two meters for talk back. The video modulator is full 8 mHz for computer graphics and color. Requires 13.8 vdc reg @ 70 ma. Tuned with xtal on 439.25, 434.0, or 426.25 mHz. Two Freq \$ 115 ppd.



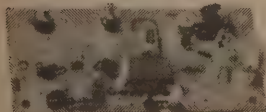
2. PA5 10 WATT ATV POWER MODULE \$ 89 ppd

The PA5 will put out 10 watts RMS power on the sync tips when driven with 80 mw by the TXA5 exciter. 50 ohms in and out, plus bandwidth for the whole band with good linearity for color and sound. Requires 13.8 vdc regulated @ 3 amps.



3. FMA5 AUDIO SUBCARRIER GENERATOR \$ 29 ppd

Puts audio on with your camera video just as broadcast TV does at 4.5 mHz. Puts out up to 1 v p-p to drive the TXA5 or VM-2, 3, or 4 modulators. Requires low Z mic (150 to 600 ohms), and +12 to 18 vdc @ 25 ma. Works with any xmtr with 5 mHz video bandwidth.



4. TVC-2 ATV DOWNCONVERTER \$ 55 ppd

Very sensitive stripline MRF901 (1.7 db NF) preamp and double balanced mixer module digs out the weak ones but resists intermods and overload. Connects between uhf antenna and TV set tuned to channel 2 or 3. Tunes 420 to 450 mHz. Requires +12 to 18 vdc @ 20 ma. Super sensitive TVC-2L with NE64535 preamp (.9 db NF) stage \$ 69 ppd.



TVC-4 ATV DOWNCONVERTER \$ 89 ppd

This is a packaged version of the TVC-2 converter with internal power supply. Has BNC input and F output connectors. Also available with the NE64535 for \$ 105 ppd. (TVC-4L) Size 5 1/2 x 2 1/2 x 7 inches.

PACKAGE SPECIALS

TXA5-4, PA5, FMA5, and TVC-2

BASIC MODULE PACKAGE . . . \$ 249 ppd

OPTIONS:

- 2 frequency exciter add \$ 26
- NE64535 low noise downconverter . add \$ 15
- Packaged TVC-4 downconverter . . add \$ 34
- Magnacraft W120X-14 coax relay . . add \$ 41

SEND SELF ADDRESSED STAMPED ENVELOPE FOR COMPLETE CATALOG AND ATV INFO. We have all your ATV needs: Antennas, Cameras, Repeaters, Video Monitors, Preamp, Linears, Test Equipment, and more. 19 years in ATV. Check, Money Order or Credit Card by mail. Credit Card orders call (213) 447-4565

1-82



P.C. ELECTRONICS



SYNC STRETCHING THE TXA5 ATV EXCITER/MODULATOR.

By W6ORG

The sync stretcher circuit on the TXA5-4B exciter modulator can be installed for those who want to accurately set the video to sync ratio at the nominal 10 watt PEP out of their TC-1 or PA5, or to compensate for the gain compression found in most amateur transistor high power amps. You may install the parts and tune up yourself if you have a oscilloscope and a DM-1 or other RF detector on the antenna RF output or have P. C. Electronics do it for you...see latest catalog for prices.

Referring to the TXA5 sheet, the full video input is capacitively coupled to a video amplifier, Q7, for a voltage gain of 5. If the nominal video input from a camera is 1 volt p-p, then a good low distortion, negative going sync pulse will appear on the collector of the sync detector transistor, Q8. The time constants of the resistor and capacitor network between Q7 and Q8 were chosen to prevent noise and average picture level (APL) changes from falsely triggering the sync detector. Q9 inverts the sync pulses and pulls up the voltage on modulator amplifier Q5 toward the 13.8 V supply thru the 5K pot only during sync time. During video time, Q9 is off and has no affect.

The 5K stretcher pot will then pull the power output up above the 10 watt setting of the 1K bias pot to the limit of the full power capabilities. In some cases this may still not be quite enough to give 30% sync to 70% video on the scope from the detected RF output of the DM-1. Therefore the blanking or black level may be better set by adjusting the 1K bias pot additionally. Do not be disturbed by the lower average power read on a Bird wattmeter, the PEP (peak envelope power) is acutally higher and will be constant regardless of light or dark contrast scene changes (APL). Set video gain pot to the point where a very white part of the picture is just about to limit on the scope. Off the air reports should show that the pictures are more stable, especially if recorded on a VCR, and have equal or less snow content eventhough the average reading Bird Wattmeter may show a lower than normal reading.

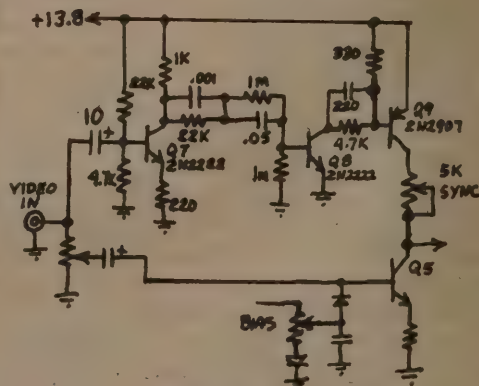
The layout is very crowded. It was added to existing production artwork to save time and costs. We suggest starting at one end and adding parts progressively across to the other end to prevent putting a part in the wrong hole. Do not substitute other values or so called equivalents for best results.....W6ORG (c) 12/81



COMPONENT SIDE

ONLY ADDED PART VALUES ARE SHOWN.

Resistors: 220, 330, 1K, (2) 4.7K, (2) 22K, (2) 1M. 5K trimpot.
(2) 2N2222 npn, 2N2907 pnp.
Caps: 10 mf radial, discs: 220pf, .001. .05 may be disc or mylar.

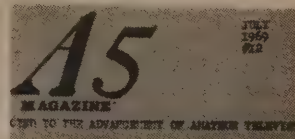


PART OF TXA5 MODULATOR



Beginning with this issue, we shall provide space to take a look back in time at early issues of "A5 Magazine" and report just what was going on with Amateur Television as far back as 10-15 years ago. We are anxious to complete our personal collection of A5 Magazine and lack some of the earlier issue in 1967 and 1968. If any of you ole' time subscribers out there would be so generous to loan us your copies for a few weeks, we would like to have Ralph Wilson copy them and return them postpaid unharmed. Those of you interested in obtaining back issues or articles may write to Ralph Wilson WBØESF at 4011 Clearview Drive, Cedar Falls, Iowa 50613. Ralph provides such great "copies" that is hard to tell them from the originals.

Almost 13 Years Ago!



The JULY 1969 issue of A5 Magazine, published by Martin Balk WB2SZW and Donald Lewine WB2UMF, shows a homebrew rack-mount ATV system with the renewal subscription information listing only \$2.00 per year (12 pages). CCTV Center, Inc. (Ben Lami K2HUD in Little Falls, NJ.) ran an advertisement for "special buys" on cameras and vidicons. It is mentioned that past circuits that have been printed can be obtained by sending two 6-cent stamps, a new ATV Magazine and Association in Belgium and a call for nationwide ATV schedule at 10 pm. EST on the 3rd Thursday of each month (wonder if they saw anyone?). A "new" advertiser that helps pay for the magazines expenses called "PC Electronics" out of Temple City, California runs his first ad, the inside center section is a schematic layout of a 4.5 MC. FM Audio Subcarrier by Dan Graham of Toms River, NJ., Ted Cohen has his Macdonald SSTV Monitor for sale, Al Denson (Denson Electronics) is looking for a boat to take on the rivers (did you ever get one Al?) and Michael Jones of Fortson, Georgia has some Rtty gear for sale. Active TV stations submitting reports are WA2CEY, K3ZTJ, WA3AZS, W2TAM, K3ZKO, W2CQH, W3MFY, K3IKJ, WA3ITO and K3KFL. Tom O'hara's ad has a video modulator circuit for \$19.50 and an audio subcarrier kit for \$15.00. Tom also peddled Rtty circuits TU, AFSK and Auto-starts. Ah, those were the "good ole days"?

July 69 #12



Amateur Television Magazine Fast Scan TV UHF Contest



Announcing the A5 ATV Magazine FSTV Contest Aug. 21-22nd! FSTV Contests are nothing new for us, the first one was held July 3rd and 4th in 1976 as described in the Jan/Feb 1976 issue. The late summer 1982 contest falls at the "peak" of DX season and is coordinated near the ARRL UHF Contest which means UHF activity will be there! (VHF contest Sep 11-12). The contest will be designed on a point basis awarding bonus points and DX

"multipliers" for those making one or two way contacts over great distances. The July issue will carry more specific details of this contest. One way received reports will be counted as will on-carrier or sub-carrier audio contacts on ATV frequencies. Two-way ATV will bring the big points with repeater contacts not allowed. Multi-band contacts will be encouraged with extra bonus points for the higher UHF band contacts. Callsign identification must be in video with P1 to P5 signal reports-P1 being a locked up "picture" not sync bars. Logged time and degree of signal radiation must be reported along with the computed distances measured in Longitude and Latitude degrees. Portable and Mobile operation allowable with special points. Watch for the July Special ATV Contest issue of A5 ATV Magazine and pass the word! Get those antennas ready and win a 3-year subscription to A5 Magazine with your photo on the front cover. If you have any ideas or suggestions to make this contest interesting send them to us!

A5 ATV MAGAZINE CELEBRATES ITS' 15th YEAR!

An Inside Look At Amateur Radio's Only Full Coverage Specialized Communication Publication.

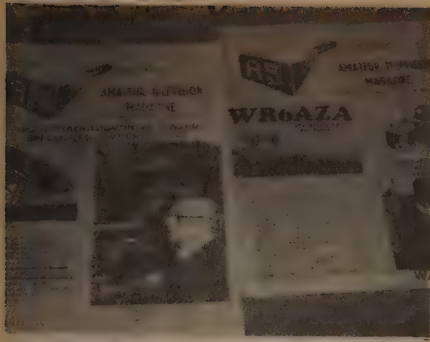
Did you ever wonder what goes on behind the scenes that makes up a magazine before it gets delivered to your door? Believe me, there is a lot of work involved by many people putting together a monthly publication! All the trips to the photo shops for film, the phone calls needed for advertising and articles, letter correspondence with subscribers, contracts for advertising, assembly of the magazine itself are all but a few of the things involved in the publication of A5 ATV Magazine. We spend an average of 40-50 hours per week involved in these tasks not including time spent traveling to and from shows, club demonstrations and hamfests on weekends. It is a very fun and rewarding experience seeing the finished copy come off the presses that represent a total months' work!

ASSEMBLY; Designing the front cover is the most fun! You get to pick 2 or 3 appropriate photos to establish the theme of the month's publication and begin to assemble the basic article outline format to be used. Sometimes articles that were planned to be inserted don't make it for one reason or another while others get inserted at the very last minute that you didn't actually count on. Our basic issue format is for pages 1-20 devoted to FSTV (articles and advertising), pages 21-23 for Satellite TVRO, pages 24-29 for SSTV, pages 30-33 for Amateur Satellites or Computers, pages 34-36 for FAX and pages 37-40 for RTTY. This gives a good spread of Amateur Specialized Communications to report on with 70% devoted to our first love-Amateur Television!

PRINTING; We recently underwent a major change at A5 ATV Magazine in that we uprooted publication and mailing from the Topeka, Kansas area to Davenport, Iowa so to bring things a bit closer to home. This has proven successful not only in ease of issue assembly but at a reduced cost savings for which we can sink some of the extra profits back into the magazine for larger issues and more color printing! Photo 4 shows Kim at TRICO Company using the modern computerized typesetter which is used for some articles and all photo captions including front cover headlines and article listings and numbering of pages. Not all printers have newsprint "web presses" such as in photo number 5. They are very expensive machines (North American Rockwell) usually used by printers of newspapers. It is fascinating to actually watch the presses run, the folding machines fold, the cutting machines cut, the stapling machines staple and the final issue product coming out the other end.

MAILING; The job isn't over yet, however, until the issue is at your doorstep and in your hands! The old way of subscription bookkeeping involved index cards and a lot of typing and maintenance of duplicate files. Basically lazy, I knew there must be a better way and employed L. E. Chute Company to keep our subscription lists on computerized "disk drives" with all the information needed and updated as shown in photo 11. It allows me to project budgets of income, monitor the rise and fall of membership more closely and to see what areas of the world are really into ATV activity. At present, we are in all 50 U.S. States and 60 foreign countries with an average subscription level of around 2,000. We are certainly not QST or Wayne Green but hopefully fulfill the gap left where other "ham publications" refuse to cover because of low business volume dollars or non-expertise within the specialized communication field itself. Our success for over 15 years has been in the devotion of the owners such as Martin Balk and Donald LeWine, Ron Cohen, Henry Ruh and myself along with the great support of contributing authors, advertisers and you the subscriber. Current contributing authors include; FSTV-Tom O'hara W6ORG, Henry Ruh KB9FO, Mike Silvernail WB4BNJ, TVRO-Gerard Wilson WA6RDA, SSTV-Don Miller W9NTP, Tom Hibben KB9MC, Gayle Sells WA7AMQ, COMPUTERS-Clay Abrams K6AEP, Ken Rothmuller WA6NFA, FAX-Robert Roehrig K9EUI and RTTY-Joe Elliott KØWVN. We must also mention our "foreign representatives"; DJ4GL, G8PTH, ZS6BTD, CE3AUL, ZL2FR, JAØBZC, VE3BWW and VE6PW. Add in Ralph Wilson WBØESF for providing "copy" service and all you have to do is keep em' happy and working for you and how can you not have a successful publication like "A5 ATV MAGAZINE"? 73's!

WBØQCD



Designing the front cover is the most fun!!!



WBOQCD assembles articles and advertising.



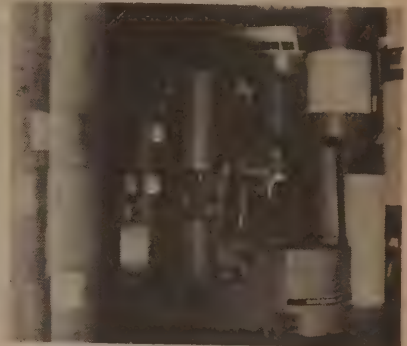
WBOQCD's SYL Rosemarie develops many A5 photos.



Computerized typesetting for A5 by Kim Bellitz of Trico Publishing.



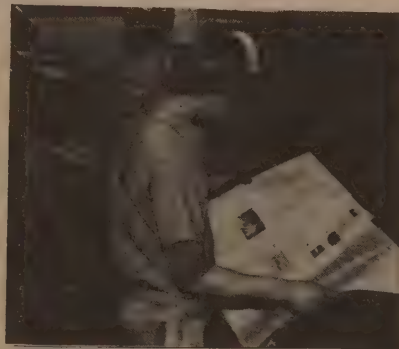
Giant Goss web presses turn out the magazine.



No shortage of newsprint paper here.



The folder machine folds the issue together and readies for the cutter.



Harv Jones proofreads early copies for any errors.



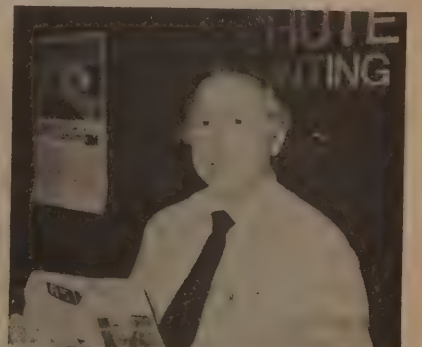
Willie Eiselsstein runs the magazine through the stapling machine.



Beverly Crist, secretary of Trico, displays the finished product.



Jill Carter, L. E. Chute, updates A5 subscription files.



Jim O'Brien, Owner of L. E. Chute, sorts issues into zones for bulk mailing at the Post Office.

TVRO SERIES — PART 3

70 MHZ. IF

1 GHZ. OSCILLATOR by WA6RDA

A lot of interest has been sparked by this series of TVRO Articles Via A5 ATV Magazine. I answer some questions of possible interest to others; "Yes, the receiver is tunable from 3.7 to 4.2 GHZ (Actually it will tune from 3.6 to 4.5 GHZ if you use the WATKINS-JOHNSON WJ-818 voltage tuned oscillator which sells for \$120 as shown in Article 4 or the series. Nothing is crystal controlled. The 1st L.O. tracks with AFC from a phase lock loop circuit. The 70 MHZ if has about 42 db gain. The 2nd L.O. is fixed at 970 MHZ. Look at the 1 GHZ Oscillator article in this issue. The LNA Amp is GAS-FET and has about 22 d.b. gain with a .9 to 1.2 noise figure. You must cascade two of these to obtain 42 db overall gain for your system. No tuning is required. I don't know how the system will work in foreign countries (Bogata) for the footprint of the signal is concentrated on the USA. One source suggests possible good reception using a 20 foot dish with an 85 degree LNA. I have plans for constructing a single conversion receiver using a ratrace mixer, however the performance is not as good as the one being published. I will publish the layout later on down the road for those who desire less \$\$\$\$. I do not recommend a spherical antenna. Article #7 will be a 13' satellite TVRO Dish Antenna article with a polar mount which can be constructed for less than \$200. Send SASE for return answers or watch the next issue of A5 ATV Magazine. -WA6RDA

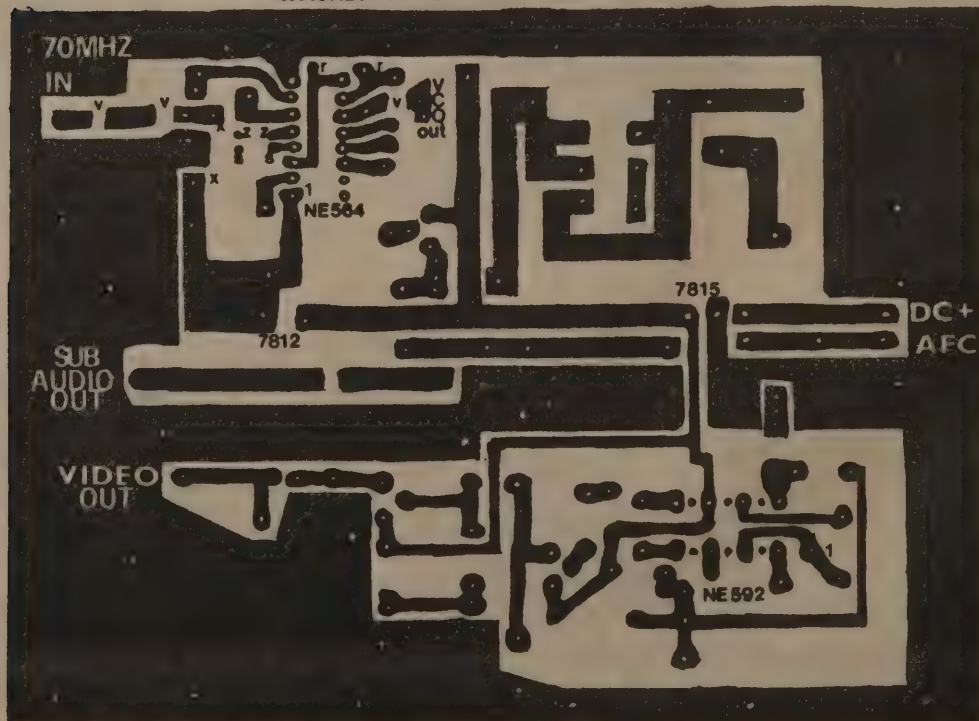


ALL ABOARD TVRO
How to Build Your Own Satellite Receiver.



An error was made in the April Issue (Part 2) on a printers reduction of the submitted TVRO Demodulator layout. A5 Magazine apologizes for this oversight and reprints the same board at authors original full size.

WA6RDA TVRO DEMODULATOR BOARD



WA6RDA
Gerard Wilson
P.O. Box 241
Glen Ellen, CA
95442

ALL ABOARD TVRO

3RD OF A 7 PART SERIES

70 MHZ I.F.

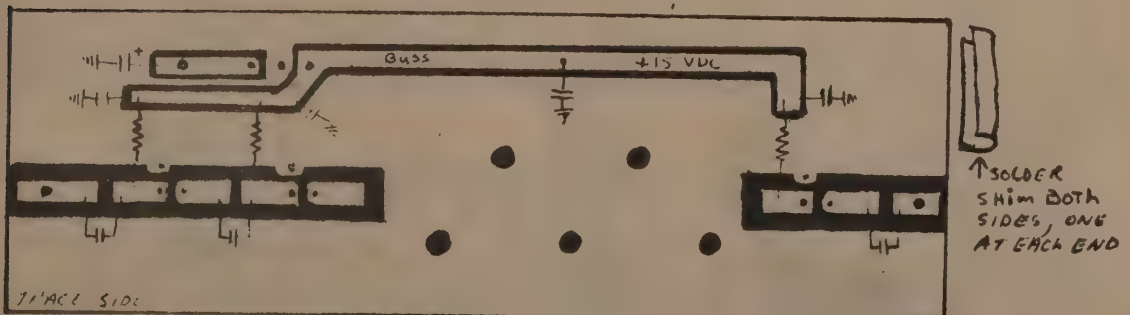
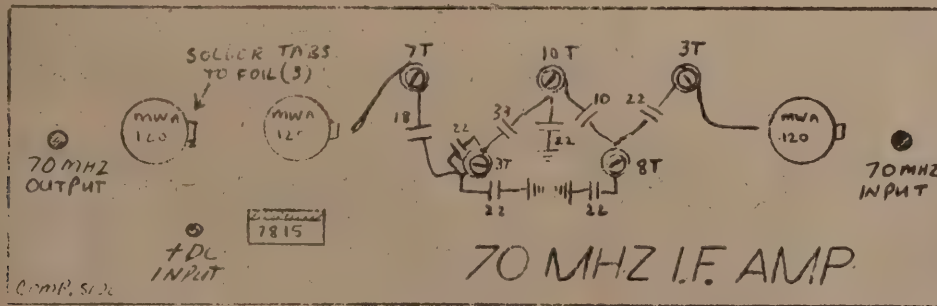
By G. Wilson

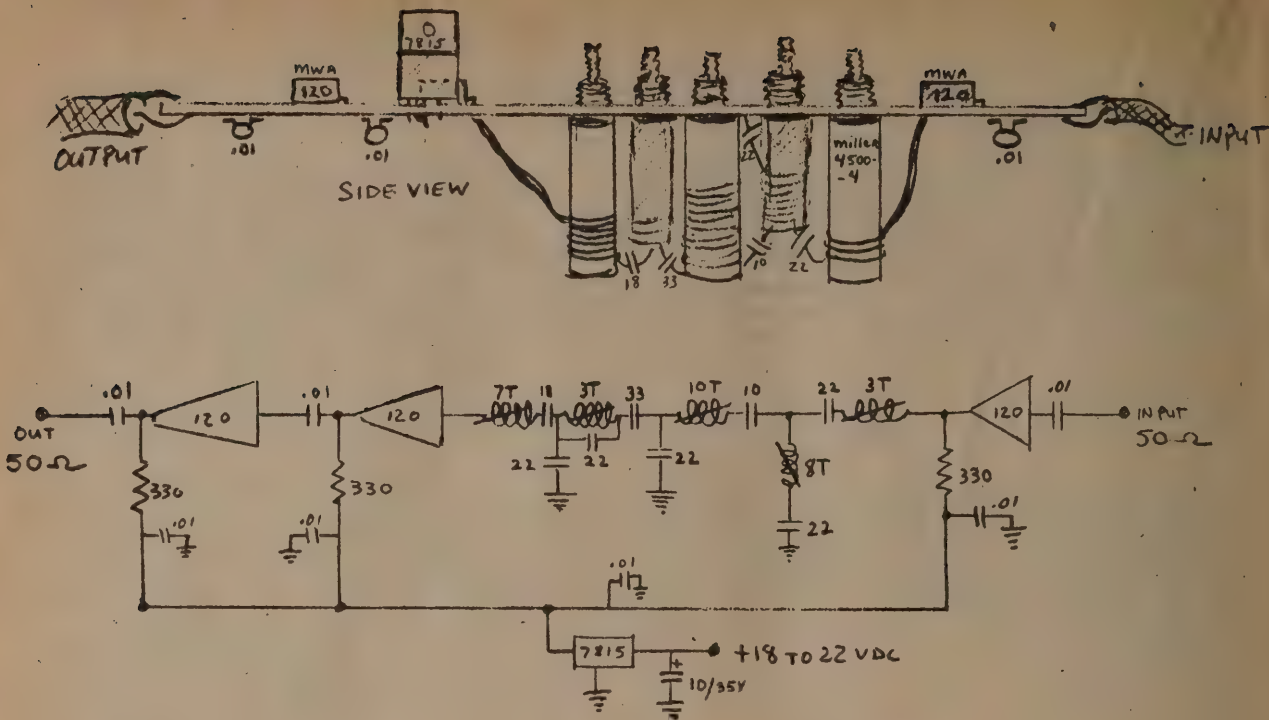
The object of this module is to provide 42 db gain at 70Mhz, with a bandwidth between 20 to 35 Mhz. Assembly of this project is simple enough that it doesn't justify etching a pc board. Use double sided .031 epoxy material, and cut the area away that is dark, with an xacto knife. Leave the component side alone except for spot facing clearance for component leads. The 15vdc buss could be insulated wire, glued to the pc board, instead of carving the foil. This could eliminate some work. Wind coils on Miller 4500-4 forms using #26 enameled wire, close wound at bottom end. (4500-7 also acceptable) Install as shown, positioning the leads to face the next component, and solder the three 22pf to the center of the pc between the coils. Note that there only 20 holes to be drilled in the board. The input and output "hole" is to accept a SMA connector if you desire. Otherwise omit these 2 holes if you plan on soldering direct to coax. All other components solder to traces direct, except MWA120 and 7815. Be sure to solder the tabs of the three 120's to the foil. Another good idea is to fold brass shimstock over each end of the PC in and output, and solder both sides.

Adjust bandpass filter somewhere between 20 and 35 Mhz. A sweep generator is necessary if you want picture quality to be correct. All caps are dip micas and must be 5% for the filter. The coupling caps, .01, can be ceramic and must have zero lead length for best results. Bend the leads at right angles and top solder to the traces. Next issue: dual conversion module. Stay tuned! 73's.

Parts: 5 JW MILLER 4500-4
3 Motorola MWA 120
1 7815 regulator
1 10pf 5% dip mica
1 18pf
1 33pf
5 22pf

7 .01 50v cer disc
1 10mf 35v electro.
3 330 ohm 1/4w 5%
NOTE: Unit should draw
about 90 ma, and each
MWA120 should read 5vdc.





1 GHZ OSCILLATOR BY WA6RDA

Here is a simple but effective project than can be built in one evening. I have built several of these, using different lengths for L1 to change frequency range. Layout provided will tune from 950Mhz to 1250Mhz, and provide a full 10MW into 50 ohms.

This is a great LO for a double balanced mixer when making areceiver converter for 1296 band. Most low drive mixers require a plus 7db LO to provide correct mixing. With several db to spare, this easy construction plus low cost is the answer. If l1 is increased to one and seven-sixteenths inches, frequency will be lowered to 850 to 975Mhz, thus making a great second LO for my 4 Ghz TVRO receiver. I "fixed" the frequency to 970Mhz by using a 6pf cap on C-5. Use a dip mica or NPO monolithic, and lay C-5 over on its side towards R-3 (it has an effect on L-3). Layout was done on .062 double sided epoxy glass pc material, and I have etched several with a "xacto" knife

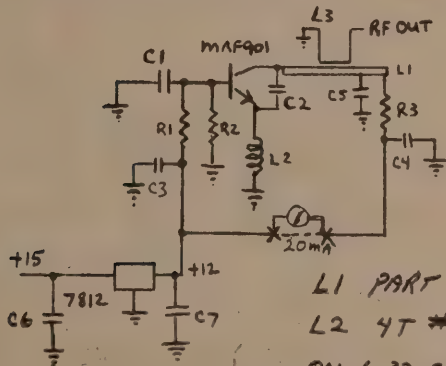
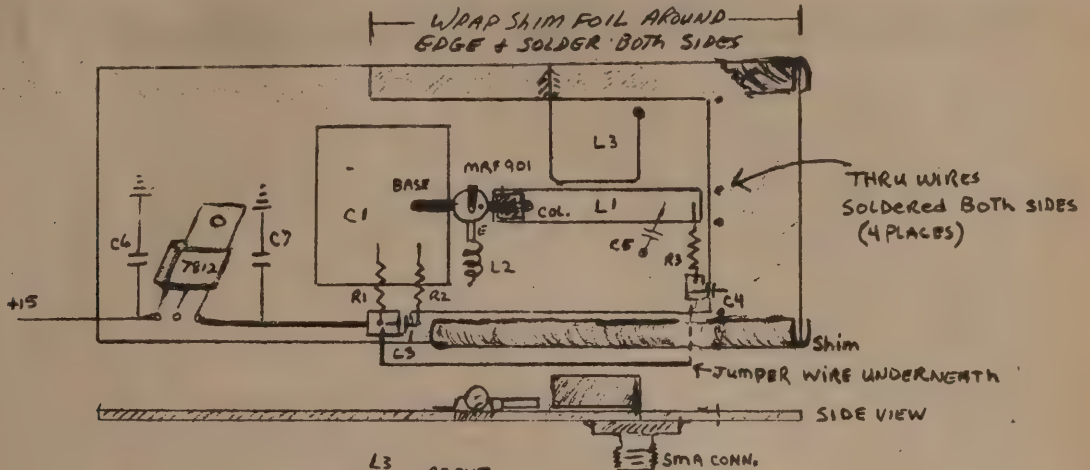
Feedback capacitor C-2 is accomplished by folding one of the emmitter leads back over the top of the transistor, and soldering a small piece of shimstock to it. Glue a small piece of .031 pc 3/16x1/4 inchs directly on top of collector lead, over stripline. Then solder shimstock between emmitter lead and pc material. This will provide the necessary feedback to sustain oscillation. While this is not a critical item, C-2 may have to be lengthened if osc. fails to start each time. L-3 matching stub is formed out of .010 shimstock, cut 3/16" wide. Center pin on SMA connec tor supports one end, while the other is soldered to ground. Rest L3 onto the pc material, and place it very close to L-1, being careful not to let it touch. All resistor leads must be formed and top-soldered to C-1 and L-1. SMA connector is a flange type, and is soldered to the foil instead of fastening it with screws.

Severall methods can be used to vary the tuning frequency. The simplest way is shown by selecting C-5 value between 4 to pf and fine adjusting by "sliding" C-5 up or down the L-1 stripline. The closer you move it to R-3, the lower the frequency. Do not slide up past middle of L-1 when raising freq., instead select a lower value C-5. Solder .002 shimstock over edges as shown, and solder feed thru wires made from excess resistor leads. L-2 is made from 22Ga buss wire formed over a 6-32 screw. (air wound and not critical). Solder one end of this 4 turn coil directly to the emmitter lead.

PC board must be drilled to allow the MRF-901 to fit flush with the traces. C-5 could be a 1-8pf piston type, but first use a dip mica to check it out. Current thru R-3 must be measured and should not exceed 30ma., with 20 ma. being avg.

Final test we performed was to freeze unit to a frosty white and notice a shift of only 1.5Mhz lower, then we heated the unit up with a heat gun to beyond touch, and it shifted only 2Mhz above nominal, which makes it a super choice for outdoor installations.

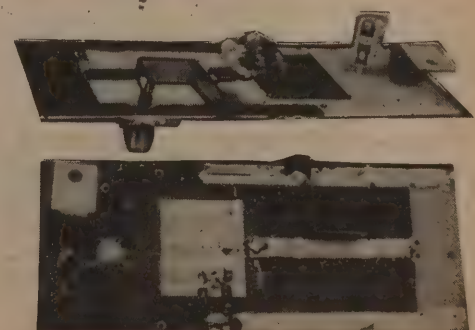
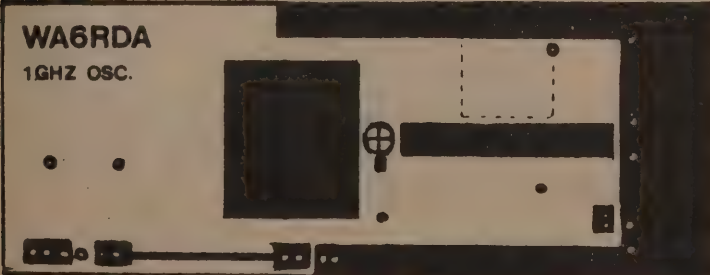
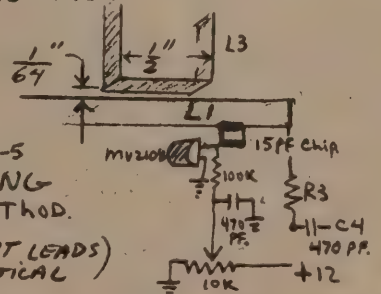
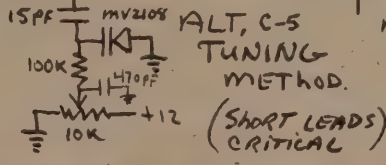
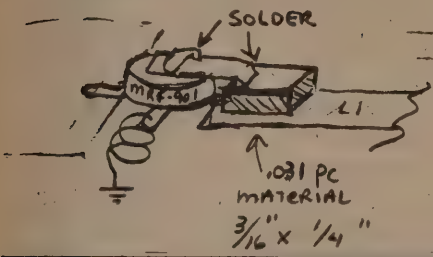
73's Gerard Wilson



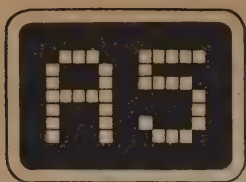
- C1 PART OF P.C.
- C2 SEE TEXT
- C3, C4 470 PF MONOLITHIC
- C5 SEE TEXT
- C6, C7 4.7UF 20V
- R1 18K
- R2 1.8K
- R3 100Ω

- L1 PART OF P.C.
- L2 4T #22 WOUND ON 6-32 SCREW FORM
- L3 .010 SHIM STOCK 3/16" WIDE

FEEDBACK DETAIL C-2



Use .062 double sided PC material, etch one side only.



DEVOTED TO HAM TV



AMATEUR TELEVISION MAGAZINE

World Wide DX

SSTV Contest



This is the "big one"! Don't miss it! Our 2nd Annual International World Wide DX SSTV Contest starting at 0000Z Saturday, July 17th and ending at 2400Z Sunday, July 18th, 1982. Once again, our successful and fun operating contests have been due to the emphasis on "quality" not quantity. A 48-hour SSTV-Video Contest on 10-80 Meters within the recommended SSTV calling/operating frequencies listed below with special "bonus" points awarded to those operators who exchange "mugshots, 1/2 speed format, color, motion animation, and a new bonus qualification of quarter-framing grab and replay. Callsigns and video reports must be in "video" form, mugshots of the station operator and/or family/friends can count only once, slower clock-rate speeds are encouraged in either 128 16.5 seconds or 256 32 second time bases, color work must contain a minimum of 2-color overlay to qualify with standard RGB frame transmissions, motion SSTV must have a minimum of 2 frames sent with automatic receive switching circuitry or manually operated switching by the receiving operator, and 64X64 "quadrant" storage of no less than 4 separate pictures with replays. To encourage all-band contest usage and promotion, extra bonus points are granted on the 10-15-40 and 80 meter band segments. Single and Multi-operator stations are recognized with crossband contacts not permitted. Individual contacts count only once per band with repetitive multi-band contacts acceptable. Stations over 25 DX-Countries worked add 25 points, 50 DX add 50 points over 100 DX add 100 points! Each SSTV two-way contact is worth 5 pts. (plus band and bonus multipliers) within the same country, 10 points for DX out of country. Submission of logs with totaled scores must be postmarked no later than August 1st, 1982 and submitted to: Contest Manager, A5 ATV Magazine, PO Box H, Lowden, Iowa 52255-0408. (Logs will be returned as will any photos, etc.)

Frequencies of Operation (Sug.)

80 Meters	3.845	3.990
40 Meters	7.220	7.290
20 Meters	14.230	14.340
15 Meters	21.340	21.440
10 Meters	28.680	28.680
6 Meters	50.150	50.150

Advanced/Extra General

Bonus Points/Multiplication Factors

Mugshots	1 point
Slow-speed	2 points
Qua -frame	3 points
Motion SSTV	4 points
High Resolution	5 points
Color SSTV (RGB)	10 points
6 Meters	times 2
10 Meters	times 2
15 Meters	times 2
40 Meters	times 3
80 Meters	times 3



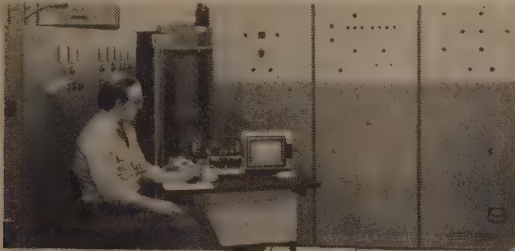
AWARDS: 1st place winner receives a 3-year subscription (worth \$60.00 Surface US/Canada \$78.00 foreign Surface) to A5 ATV Magazine with front cover picture plus Gold Certificate, 2nd and 3rd place winners receive one-year's subscription and Gold Certificate, all entries regardless of score will receive Gold Certificate suitable for framing. Results will be in the November issue, some log-sheets and DX Country lists available from WBØQCD. Contest entry verifications audited by Ralph Wilson, WBØESF or Cedar Falls, Iowa. Good Luck!

"Promotion of this contest in QST, 73, CQ, Ham Radio and WorldRadio"

A5 MAGAZINE VISITS KW CONTROL SYSTEMS

by WBOQCD

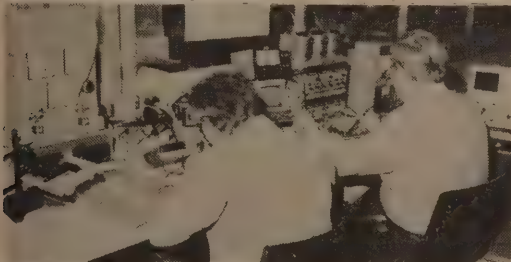
"Impressive" is the only word that can describe the people at KW CONTROL SYSTEMS of Middletown, New York! After seeing my first German SC422 SSTV Converter and talking for over an hour with designer/builder Volker Wraase DL2RZ, I was convinced that this product was years ahead of competition. My further contact with Walter Giesser WB2OWX at KW (US distribution & repair facility), brought immediate results as he "flew" to Iowa & literally came walking up my sidewalk with the first SC422 converter sold in the U.S. After a quick lesson on all the features of the SC422 unit, Walter returned to the airport in his rented automobile and was back in New York that evening. I accepted an invitation on Dec. 5th and 6th to visit KW Control Systems and was amazed at the multi-million dollar plant facility. Right from Ted on down, KW provides many benefits to its' employees not found in other facilities. The atmosphere was warm and friendly as I began clicking away the 35 mm Pentax camera taking shots of the large power supply systems used for the computer industry, Research and Development areas, circuit board processing sections and assembly benches. The SC422 series of Slow-Scan TV converters for the Amateur market is strictly a sideline for KW that became a sideline product from its' "landline SSTV monitoring system" incorporated within the computerized power supply unit systems. KW handles the PILLER line of industrial power supply equipment that is the leader within the commercial computer industry. Techniques taken from Amateur Radio SSTV by Walter Giesser (then time TV repairman), and applied to problems at KW Control facilities proved successful as Walter now heads the R & D department at the New York company. If there has been any doubt as to the "quality or repair" service at KW, let me assure you a buyer of the SC422 system has absolutely no worries. A5 ATV Magazine "salutes" the people at KW CONTROL SYSTEMS, INC!



Charlie Schmidt logs SSTV readings over the unique landline interface to customers, PILLER Power Supply Systems in the background.



Carlos Mercado removes a circuit board from the etching tank.



Technicians Bruce Selge and Francis Ford work on board components.



Walter Giesser WB2OWX mans the Amateur Radio SSTV station within the plant facility.




Kate Giesser takes care of the billing & advertising dept. at KW



Company President/Owner Ted Wingen joins Walter with SC422 equipment. Ted is also a satellite TV enthusiast receiving signals from International Satellites.

KW CONTROL SYSTEMS, INC.

R.D.#4, BOX 114C, SO. PLANK RD., MIDDLETOWN, N.Y. 10940

COLORSCAN 403**3 Memory Color SSTV System****Modification For Robot 400****SYD HORNE VE3EGO****SYCEL COMMUNICATIONS INC.****P.O. BOX 893****BELLEVILLE, ONTARIO, K8N2G6****CANADA**


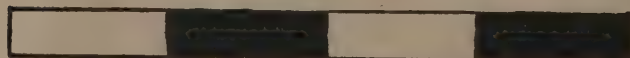
Over the past few years, many significant advances have been made in the field of Color SSTV. Don Miller W9NTP has pioneered color development with his two-memory color system (1). Jeremy Royle G3NOX demonstrated that excellent color SSTV pictures can be generated by using three Robot 400 units "slaved together" (2). My own experiments with a three color system led eventually to the development of COLORSCAN 403. The COLORSCAN 403 is a kit designed to convert a standard ROBOT 400 SSTV converter to generate and receive full color SSTV pictures by using a monochrome TV camera and an unmodified color TV set. A "systems" approach was taken in the design of the 403 unit to provide a high quality unit with a variety of features. Considerable attention has been paid in order to provide a unit that is easy to install, provides reliable service and is simple to operate. The color pictures are generated using color separation methods. This is done by snatching three separate color frames through matched red, green and blue colored filters and storing the individual frames in separate memories. The picture is reproduced by scanning the three frames simultaneously and combining the three outputs in a color encoder to produce a NTSC TV signal on channel 2 or 3 to drive any color TV set. Separate red, green, blue and sync outputs are provided to drive a color monitor. Provision is made for viewing the incoming SSTV signal or preview of a camera picture on a monochrome monitor. In addition, each frame stored in any of the 3-memories may be viewed on the color monitor or color TV set.

AUTO-FILTER SERVO CONTROL (AFSC) The Auto-Filter Servo Control consists of a servo and a filter disc assembly containing the three matched color filters. The servo control circuits are located on the color board. This unit automatically positions the correct color filter in front of the camera lens when a picture is being snatched. Because of the wide variety of monochrome cameras in use today, the AFSC unit must be mounted on the camera by the purchaser.

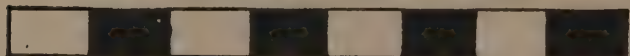
RAINBOW COLOR BAR GENERATOR A "special" and unique Rainbow Color generator is provided with the 403 system. This pattern generator marks each frame individually thereby making it unnecessary to inform the receiving station as to which frame is being transmitted. The three patterns are shown in figure 1. below. When the 3 individual patterns are combined, the resulting color pattern consists of eight colors; white, yellow, magenta, red, cyan, green, blue and black. This color pattern appears at the bottom of each color picture as shown on the front cover of this issue. The Rainbow Color generator or regular SSTV grey scale generator is completely switchable on the front panel of the 403.



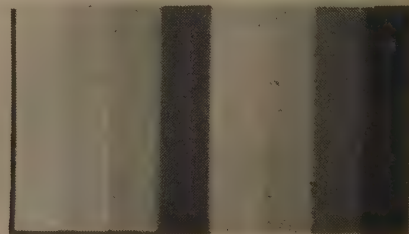
Pattern below RED frame



Pattern below GREEN frame



Pattern below BLUE frame

Fig 1

W Y M R C G B Blk

MECHANICAL DETAILS In order to provide adequate space to contain the additional circuitry and memories, two additional front and back "add-on" panels are provided for the ROBOT 400 SSTV converter. The overall height addition to the ROBOT 400 unit is 2.5 inches. A "new" cover, with extra openings to provide adequate ventilation, is provided with the 403 kit. The picture on page 28 shows the "completed" unit.

CONVERSION OF THE ROBOT 400 Conversion of the ROBOT 400 SSTV converter is simple. An additional power assembly is mounted in the base of the ROBOT 400 unit. The front and rear panels are fastened to the corresponding front and rear panels on the ROBOT 400. The memory board circuit, which is pre-assembled and tested, simply plugs into the connector in the rear panel. Several lead assemblies connect from the circuit board to the ROBOT 400 circuit board. Connection is made by unplugging IC's and plugging in either a prewired DIP connector or IC connector assembly. No soldering is required on the original ROBOT 400 circuit board whatsoever!

COLOR ENCODER The Color Encoder is a separate unit which is housed in an aluminum box and is mounted in the base of the unit. The color encoder combines the red, green & blue outputs from the scan converter and produces an NTSC TV signal. The color encoder is supplied also in "kit" form. Correct alignment of the color encoder is ensured by the use of the Rainbow Color Generator discussed earlier. External connectors are provided on the rear add-on panel for the following; 1. AFSC to filter control servo mounted on the camera used 2. To the antenna terminals of the color TV set 3. Red, green, blue and sync outputs for the color monitor.

COLORSCAN 403 KEYBOARD Provision has been made in the COLORSCAN 403 unit to interface the COLORSCAN 403 KEYBOARD. This "special effects" keyboard is a separate unit which will interface with a circuit board located inside of the COLORSCAN 403 system. In addition to standard keyboard generated SSTV graphics, the keyboard will provide other additional convenient features. The COLORSCAN 403 Keyboard will be available at a later date. "See the COLORSCAN 403 COLOR SSTV SYSTEM this year at Dayton"! -VE3EGO

ACKNOWLEDGEMENT The author wishes to thank Jeremy Royle G3NOX for providing the excellent photographs of the SSTV pictures generated from the COLORSCAN 403 unit (front cover A5 ATV Magazine May issue) which were produced from audio recordings. (3)

REFERENCES 1. Low Cost Conversion of the Robot 400 to Color by Dr. Don Miller W9NTP Waldron, Indiana QST January 1981 2. SSTV in Color by Jeremy Royle G3NOX QST November 1980. 3. A5 ATV Magazine, PO Box H. Lowden, Iowa 52255

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COLORSCAN 403 ROBOT 400 CONVERSION KIT

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- Prewired connector lead assembly
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- 115/230 V transformer, power supply assembly, switches
- Auto filter SERVO control unit
- Front and rear panel overlays
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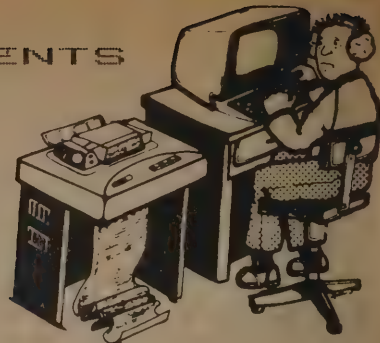
Belleville, Ontario, Canada

K8N 2G6

"See Us At Dayton"

TRENDS IN SSTV DEVELOPMENTS

Clayton W. Abrams K6AEP
1758 Comstock Lane
San Jose, CA 95124



As many of you have noticed 1982 has started off with a bang with many new and exciting SSTV developments. I'm sure as the year progresses we will see more exciting announcements. Some of these announcements will include more color SSTV Robot 400 boards, computer SSTV applications, new scan converters and hopefully the introduction of single frame color SSTV.

You may wonder why this is happening so fast and all in one year? In this article I would like to give you some insight to why this occurred, and some things you can look forward to in the next few years.

The real answer to why this is happening so fast is the electronics semiconductor industry. Here in silicon valley the effect of the IC is very noticable. It seems weekly that new company spring up out of the old fruit orchards. We no longer grow apricots but IC's. New IC's are developed frequently with more function and less cost from previous generations.

Lets explore some of these developments as applied to SSTV and see how they will effect the advancement of our hobby.

COMPUTERS

The future of SSTV lies with the computer. Since the first microprocessors were introduced into the consumer market in 1974 this industry has exploded. The little plastic IC modules can replace thousands of transistors which were used in older equipment and for less costs. When Intel introduced the 8080 in 1974 its cost was around \$200. Today you can buy 8080 IC's for less than \$3. We even have a Drug Store here in silicon valley where IC's can be obtained along with other important items like bath soap and shampoo.

The trends in home computers is to use them just like building blocks. Since they are so versatile you can program them to do just about anything. If you take an off the shelf computer mix in a little programming and a bit of hardware, you may come up with quite a mixture. One of the best mixtures I know of is SSTV. In the future you will find computers less expensive and smaller. Lets look at some of the popular computers available now. One of the most popular computers of the older generation is Apple. This computer uses semiconductors which are mostly MSI (Medium Scale Integration). The Apple uses about 60 MSI IC's and is enclosed in a rather large box. When introduced this unit represented the state of the art of technology in 1978.

A more modern less expensive computer which dramatizes this trend is the TRS-80C Color computer. This computer has 27 IC's, and is in a smaller package. The cost is approximately one third of the Apple and has a CPU with more power and more flexibility. This computer uses LSI (Large Scale Integration) technology and is a product of the 1980's.

What can we expect in the future? Probably by 1990 we can expect to see computers more powerful than anything we know of today. Their sizes will be very small and their cost low. You will be able to place the computer in you pocket and carry it around with you like a 2 Meter HT. They will be ideal building blocks for SSTV picture processing.

Lets look at some of the off-shoots from the microprocessor industry and see how they will effect SSTV. Most of these off-shoots are specialized integrated circuits which can be applied directly to SSTV.

MEMORY COMPONENTS

Memory IC's are devices which make digital SSTV possible. Prior to the introduction of low cost RAM IC's in 1974 digital SSTV was not possible. In 1974 Intel released a low cost dynamic 4K IC which made the Robot 400 possible. When first introduced the cost of these IC's were approximately \$20. They can now be obtained for less than \$2.

This trend of low cost IC's is continuing. Today 16K RAM IC's cost as much as 4K IC's and probably before year end the 64K RAMS will be available for the same or lower price.

These 64K memory components can be used to store digital SSTV pictures with better resolution and quality the anyone ever thought possible. This is one of the future trends we can look forward to in the next few years. The quality of the displayed pictures using 64K RAMS should approach Fast Scan TV.

DISPLAY COMPONENTS

These devices are used to manipulate the memory devices to display SSTV pictures. The current SSTV techniques used in older generations scan converters like the Robot 400 used MSI IC technology. These units are inflexible and to perform even the most trivial forms of image processing require cutting of PC lands and the installation of numerous wires and switches.

In 1978 the intelligent display controllers IC's started to appear. These IC's accomplished many of the same functions as the complex MSI IC controllers, however, their functions were programmable. This means if you wished to make modifications in the display formats all that had to be done is to make a few changes in the software. This is certainly easier than cutting lands and adding wires. In 1979 I published an article on how to use the Motorola 6845 for SSTV (ref 1). This LSI IC is now used in many computers for display systems.

Developments in display IC technology indicate that 1982 will be the year of the second generation display controllers. These controllers not only provide memory management, but also add function.

A new and exciting IC will be available this year and is manufactured by Nippon Electric Company (NEC) type 7220. This IC is the first of a new generation of display management IC's. The IC is not only flexible with its display characteristics, but it also contains function generators which will draw lines, rectangles or circles. Additional hardware functions allow you to zoom or pan on pictures in memory. This IC will make a logical choice for future SSTV converters.

With an IC like this it would be possible to establish new standards of SSTV with the correct aspect ratio of 4:3. It is unfortunate that the defacto standard of 128 pixels on 128 lines was established a few years ago by Robot. This format has many shortcomings in picture quality. However, with the new display IC's designers can create new standards with normal TV aspect ratios. One logical choice might be 256 pixels on 192 lines? It would be a simple matter with a programmable display controller to switch between different standards quickly to accommodate different types of SSTV equipment.

SUMMARY

We are entering a new era of SSTV in the 1980's. Developments will appear rapidly and the role of the computer will gradually play a more important part in these advances. Its hard to imagine how we tolerated those old P7 monitors back into the good old days. But with all the new developments in IC technology SSTV will have a bright future with improved picture quality and costs.

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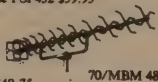
FILTERS



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W-5	SSTV receive/display	\$7.50
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"See us at the A5 Magazine booth #95 at Dayton"

Robert Wilson WBØRTM
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SSTV INTERFACE PC BOARDS FOR K6AEP SOFTWARE & TRS80C* (*TRS80C is a product of Tandy, Corp.)

A new series of PC boards for Clay Abrams TRS80C* software programs for CW/RTTY and SSTV
featuring high linearity, noise reduction sync circuitry, 5 pole audio filter, 9 pole video filter and
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TRS-80C



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Electronic Specialists, Inc. of Natick, MA. has come out with a line isolator that will control pollution originating from all forms of electrical noise, spikes, lightning or heavy machinery startups, etc. into your computer or expensive equipment such as SSTV, RTTY or ATV gear. Using heavy duty spike/surge protection, the unit houses 3 individually dual-Pi-filtered AC sockets. Load capacity is 1875 watts of spike protection with 1000 watt socket loads. Electrical line problems can be handled by the model ISO-3 Super Isolator for \$104.95. Please tell them you saw it in A5 Magazine!



A5 ATV Magazine welcomes THE PARTS STORE to our advertising! A5 will be in contact with owner Tom Dricken WB9DKT on all articles requiring kit parts such as all Robot mods, TVRO series and K6AEP Interfaces. They have a large parts catalog and on-hand supply! Call or write for their "free" catalog today!

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TRS-80C is a Radio Shack trademark

YOU SAW IT FIRST IN A5 MAGAZINE!

A New Slow Scan TV System for the APPLE II Computer

Ken Rothmuller, WA6NFA
1104 Beaumont Drive
San Jose, California 95129

If you currently own an APPLE II computer, or are considering the purchase of one, the SSTV system described in this article will be of interest. The system is designed to operate on an APPLE II or APPLE II Plus computer with at least one disk drive. The SSTV system consists of an I/O circuit card containing all of the circuitry necessary to interface your computer with your ham station and a powerful software program which performs all of the basic SSTV functions. The APPLE II SSTV system also incorporates a number of unique features which have not been available to SSTV operators in the past.

With the APPLE II SSTV system you will not need a dedicated unit such as the ROBOT 400 to transmit and receive SSTV pictures. Merely connect a low cost FSTV camera and ham transceiver to your APPLE and you are ready to go. Listed below is a summary of some of the features of the APPLE SSTV system.

Fast Scan TV Capture. A complete image or a 2:1 electronically zoomed image can be acquired from an unmodified B&W TV camera. Contrast and brightness can be manually adjusted or an auto-exposure method can be used.

SSTV Transmit. Single photos or complete slide shows can be transmitted automatically. Special effects such as inverse, dissolve, gray test bars and vertical mix can be used to "liven up" the shows.

SSTV Receive. Incoming SSTV signals can be displayed in a variety of formats. Contrast, brightness and width can be interactively adjusted with the aid of an oscilloscope-like display which dynamically plots the audio frequency of the incoming signal versus time. Photos are entered into the computer's memory for later transmission or they may be saved on disk or cassette tape.

Photo Display. Using the APPLE II HIRES graphics, 16 levels of gray can be displayed using dot dithering techniques. Three display formats are available: 256 by 192, 128 by 128 and 64 by 64 Pixels. The 64 by 64 format can be used to display up to 12 disk-based photos to provide a "directory" of what is available on any particular disk.

Hard Copy. Permanent copies of B&W photos can be made on an Epson printer which has the Grafrax option installed.

Digital Photo Storage. Disks can be used for slide storage, bypassing the need for audio recording.

Titling and Graphics. Large block letters can be added to images or to computer generated title slides. A variety of fonts and text justification options are available. In addition, boxes and frames can be added. Boxes and titles can be "painted" with any one of sixteen shades.

Image Enhancement. A special set of software tools is available to remove noise,

and improve contrast and picture detail.

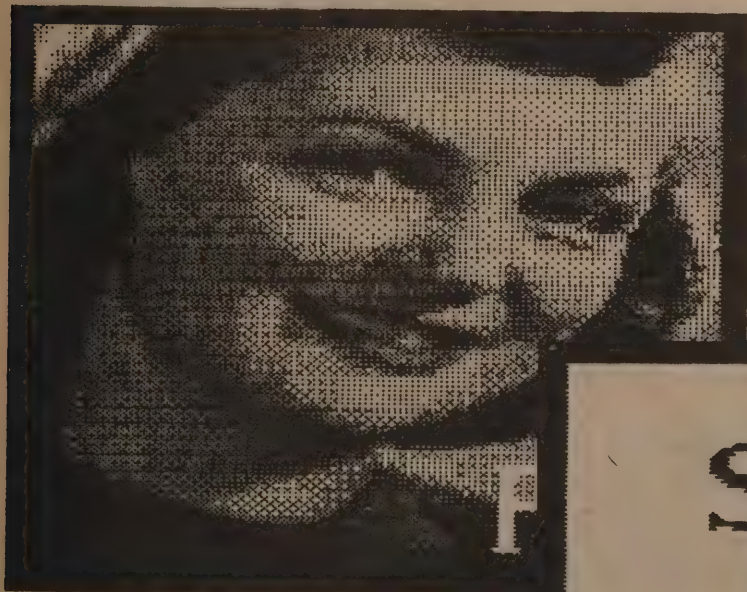
Slide Show Programming. Independent slides can be combined into a sequence of slides and special effects. The resulting shows can be saved on disk. One simple keyboard command will cause the complete show to be played back during a transmission.

The features briefly described above have centered around the B&W capabilities of the APPLE II system. The increased popularity of color SSTV plus the availability of HIRES color graphics in the APPLE II provided the catalyst to incorporate a full set of corresponding features for color SSTV. The widely used three frame RGB format (using filters during capture) is built into the system. Of special significance is a new, single frame, 8 second color mode which allows HIRES color pictures to be transmitted or received in one third the time required by the RGB technique.

The APPLE II SSTV system has been under development for over two years. I will be at the Dayton Hamvention in the COMMSOFT booth to give you a demonstration--a more detailed article with photos will follow shortly. Stop by the COMMSOFT booth at Dayton, or see you on the air!

73,

Ken Rothmuller
WA6NFA



SSTV
FOR
THE
APPLE

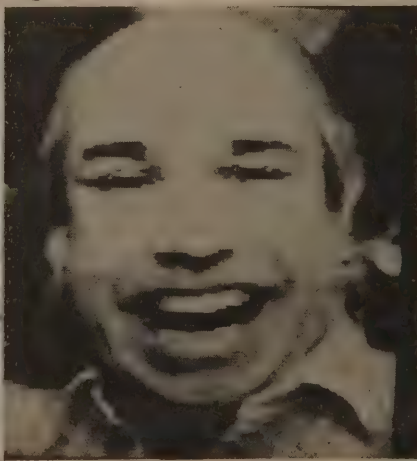
"Inspired by the inventor of "motion animated SSTV" Richard Botelho WB1ARZ back in 1981 with the use of the Volker Wraase SC-422 series converters, Tom Hibben KB9MC of Desoto, Wisconsin designed a similar system for Robot 400 owners with manual switching. Automated switching will be demonstrated at this years' Dayton Hamvention on April 23rd, 24th and 25th. -QCD"

ROBOT 400 "ANIMATED MOTION MOD" by KB9MC GET REAL MOVEMENT IN THOSE SSTV PICTURES

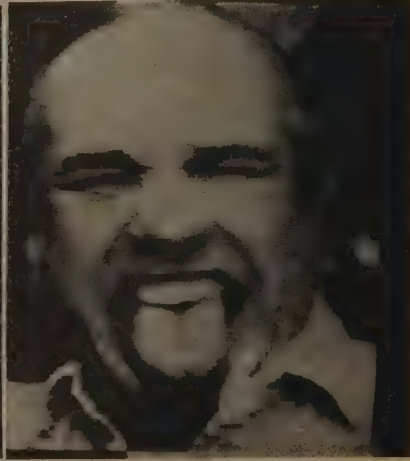
Remember the old "flip-page" animated cartoon books? With this modification and your black and white monitor, it is possible to use the "flip" principle for animation in a multi-memory SSTV system. In this case, it is the RGB switch of WA7WOD's 3-memory modified Robot 400 Color System that does all the flipping! By loading 3 alternated versions of the same subject into the RGB memories and then switching back and forth from one to the other, some really wild effects can be seen on the black and white monitor. (Other systems using a minimum of 2 total memories can obtain the same results such as Don Millers 2nd memory board system). In addition, the effects on the color monitor are pretty unusual too! A simple "mug" shot is a good place to start; Red-serious frame, Green-Big toothy grin and Blue-drop jaw and stick out tongue. Start flipping and see what happens! There are all kinds of possibilities limited only to the imagination of the operator. This mod also has other advantages; Three different received pictures can be viewed on the same time on the black/white monitor. The RGB pictures can immediately be analyzed when snatching into memory without having to switch the camera 400 switch on the color monitor. This is quite helpful when overlaying graphics. The simplest form of this mod consists of installing one additional BNC jack on the rear panel of the Robot unit for output to your black/white monitor and connecting this and the RGB output jacks to a 2-pole triple throw slide switch (see drawing). Of course, this requires a new hole for the switch. More complicated but much neater approaches is with the use of a CMOS 4066 quad-bilateral switch and the output of an existing NOR gate U120 on the 3000C board. These are wired to the existing RGB switch with the output jacks in parallel with existing wires. RGB switch then functions normally while also controlling the black/white monitor. How about that, no new holes in the front panel! (An automated version of this mod which will sequence RGBRGB or RGBGRGB etc. within a fraction of a second to a 12 or more second frame duration has now been breadboarded and tested. This will be ready in time for a demonstration at Dayton and a succeeding article in the June issue of A5 ATV Magazine!



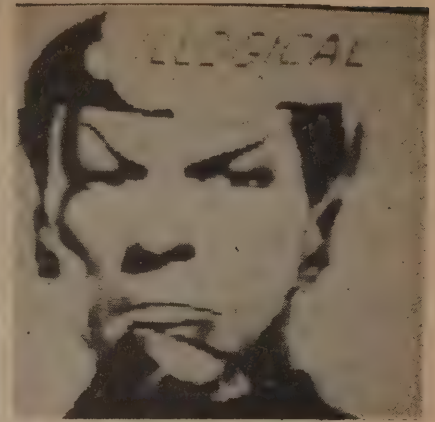
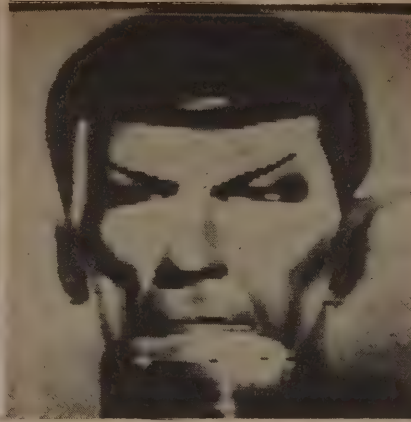
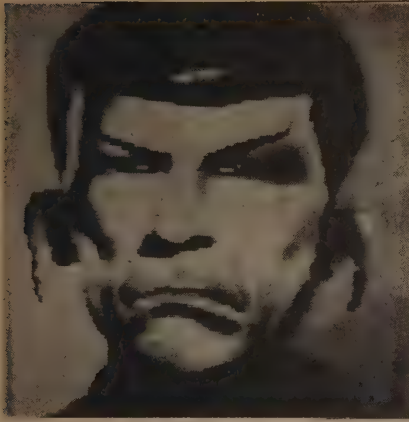
RED



GREEN

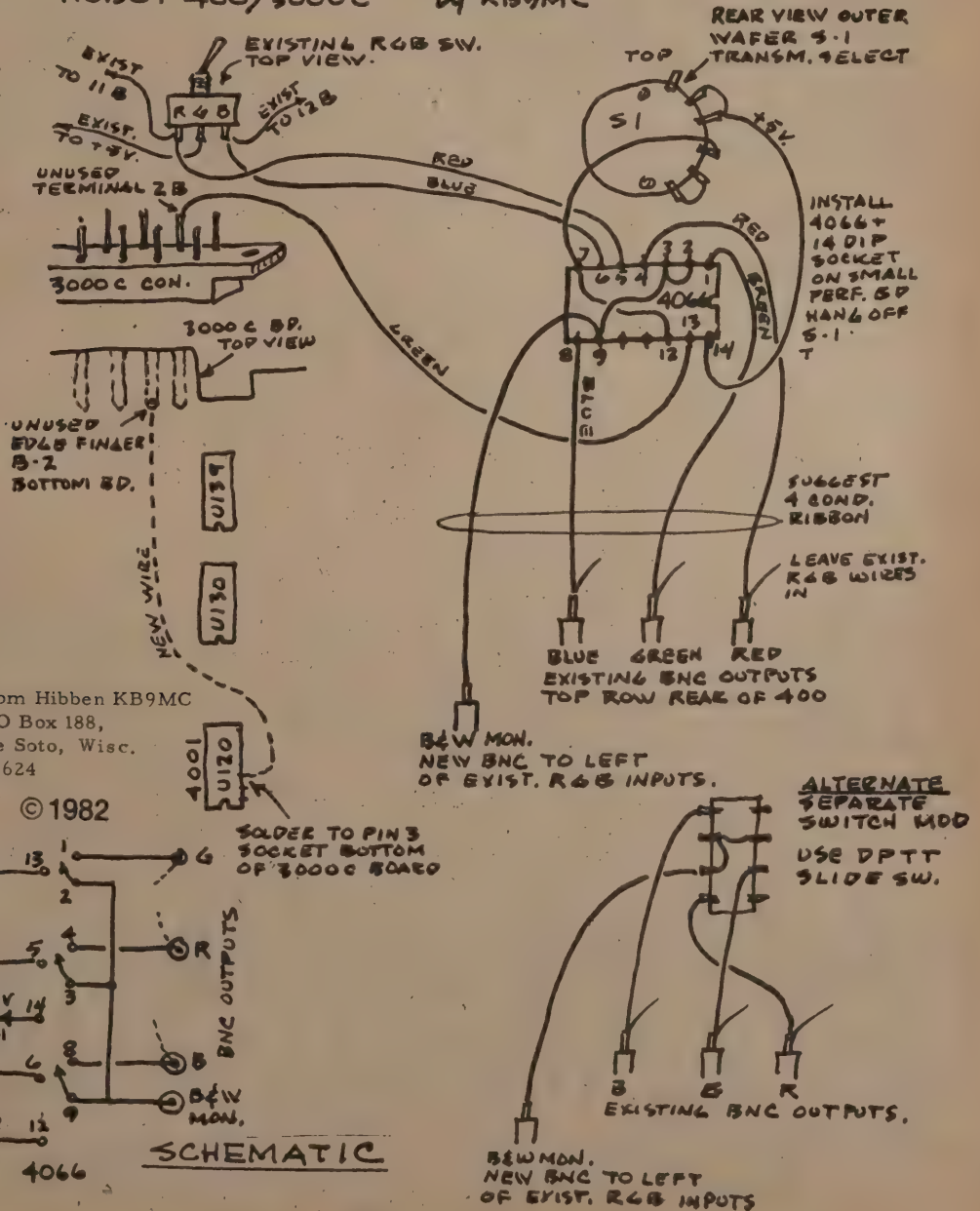


BLUE



SSTV ANIMATION MOD

ROBOT 400/3000C by KB9MC



Facsimile (A4 and F4) transmissions are now legal on all Amateur Bands except 160 M. A5 ATV Magazine has always included FAX as a part of its' specialized communication mode reporting even as far back as the early 1960's when FAX operation was peaking on the 6-meter AM Amateur band. New equipment and state of the art device interfaces will be rapidly developed to once again revitalize FAX transmissions. Beginning with this issue, A5 ATV Magazine begins a series of Facsimile articles from the history & use of Facsimile to actual conversion of available gear for the Amateur enthusiast. For further information write to Robert Roehrig K9EUI, 314 S. Harrison, Batavia, Ill. 60510

WANT TO KNOW ALL THE FAXS

Courtesy of Atlantic Surplus Sales

Weather you're a hobbyist, amateur scientist, or professional meteorologist, our Weather Fax Recorder, Type RJ-4 is capable of satisfying all your needs.

The Weather Fax Recorder was designed to receive and duplicate any material transmitted at 60, 90, or 120 Scans per minute (using the correct set of gears), or 240 spm at reduced size. It is capable of recording full size Weather Maps, Satellite Photos or Word Messages. It can copy Press Photos, national and international in origin, or any material transmitted at the same speed that the recorder is geared for, whether received by a direct line or via wireless radio reception. Giant size maps and pictures measuring up to 18½ inches wide and as long as required may be copied.

IF YOU DESIRE SUCH A FASCINATING DEVICE AT SURPLUS PRICES READ ON:

SOURCES OF FAX SIGNALS:

THERE ARE BASICALLY THREE METHODS OF OBTAINING FAX TRANSMISSIONS

1. A FAX LINE
2. A SHORT WAVE GENERAL COVERAGE RADIO RECEIVER (HF)
3. A RADIO RECEIVER CAPABLE OF COPYING SATELLITE SIGNALS DIRECTLY (VHF or UHF)

METHOD 1: FAX LINE

Those of you desiring 24 hour, round the clock reception of weather maps, satellite photographs and weather information but lacking the necessary radio equipment, can tie directly into the National Weather Service circuit. This circuit is called the National Facsimile Circuit (NAFAX). A sample copy of the NAFAX schedule is enclosed. As one can see from the schedule the National Weather service transmits a complete sampling of all weather conditions. The transmissions are sent out at 120 spm which is compatible with the RJ-4 FAX recorder. With a NAFAX line and a RJ-4 recorder you are ready for copy.

Using a FAX line to obtain Weather Information for use with your FAX Recorder is very simple. First write to the National Weather Service for a FAX permit. (Sample letter and Address given on INFORMATION SHEET). The permit is required by the telephone company. Upon receipt of the permit notify A. T. & T. Long Lines in your area and tell them to install a "Receive Only Extension" of the NAFAX circuit to your home or office. This cable is then hooked directly to your FAX unit and you can immediately begin copying. The National Weather Service does not charge for the NAFAX circuit, however, there is a nominal fee charged by the telephone company for the use of their lines. If this is the method you are going to use, call your local A. T. & T. Long Lines Salesman and get a price quote for your area. We ourselves pay \$10.50 per month for this line at our New York office.

REMEMBER this is a special line which has on it the latest Weather Maps and Information (sent 24 hours a day, and operates 7 days a week).

WANT TO KNOW ALL THE FAXS

METHOD II.

Those who already own a general coverage receiver, capable of copying radio transmissions in the HF region (2 - 32 MHz) will be able to copy fax transmissions. Naturally, the better the receiver and antenna system used, the better the reception, but even with a hobby grade receiver and the simplest antenna (long wire or dipole), one will be able to receive transmissions.

The facsimile transmissions (F4 Emission) are *Frequency Modulated* signals that can be received on an ordinary receiver. The receiver is tuned to put the carrier frequency partway down on one side of the selectivity curve. When the frequency of the signal varies with modulation it swings, resulting in a varying output which is then rectified as an AM signal. The resulting audio output is connected via the receiver's speaker terminals or headphone jack to the RJ-4 audio input. A converter can be used with your AM receiver to provide better detection of the FM signal, however, it is not required.

There are many fax transmitting stations located throughout the world, some transmitting 24 hours a day while others transmit on regular schedules. For example, the U. S. Naval Fleet receives its weather information from all points on the globe via fax and so do most maritime vessels. Enclosed is a partial list of fax broadcast stations, including their locations, frequency and transmitting times.

Fax reception is not limited to weather information since your receiver will copy additional stations including commercial, military, and press all using fax as a mode of communication. If this is the method you are going to use to copy fax, start tuning your receiver, *you never know what you'll copy!*

METHOD III.

Those desiring direct satellite copy will find this method the way to go. Let us begin by saying there are presently three frequency ranges that are being used for the weather satellite program. In the VHF region at 135.6 MHz is the ATS Geostationary Satellites, transmitting gridded WEFAX pictures. At 137.5 MHz is the NOAA polar orbiting satellites transmitting visible light and IR pictures, and finally at 1691 MHz "S" band is the new series of GOES geostationary satellites also transmitting visible and IR pictures along with WEFAX.

At this point it is best to decide which of the satellites you would like to copy. Particular consideration should be given to the polar satellites (NOAA 4 and 5) since they must be tracked as they orbit the earth. Tracking will require an antenna system capable of elevation and azimuth adjustments to insure reliable copy. Since the polar satellites are revolving around the earth they are not always within range to be copied. One would be restricted to the times when he could copy it. The polar orbiting satellites circle the earth about thirteen

WANT TO KNOW ALL THE FAXS

times a day, however, the actual number of copyable transmissions would be about 6, 3 evening and 3 daylight. The polar orbiting satellites provide global atmospheric temperature soundings and water vapor information along with sea surface temperature mapping, snow and ice coverage, melting information and additional information too numerous to list.

In contrast to the polar orbiting satellites are the ATS (Geostationary) operating at 135.6 MHz. They provide repetitive images to detect, track and monitor the growth and decay of weather systems in the temperate and tropical latitudes of the Americas, wind information and a multitude of other data. They also provide WEFAX transmissions which are copyable by all Fax stations.

WEFAX information is received on the ground, centrally processed through a computer, re-formatted, and transmitted back through a geostationary satellite to stations within receiving range. Two views of the earth are transmitted in each 8 minute broadcast. There are more than 30 broadcasts daily from each of two geostationary satellites. The primary feature of WEFAX broadcast is its timely and repetitive nature. Most observations are less than two hours old by the time they are received by the user. The same area is viewed several times each day and night at approximately three hourly intervals. This enables the user to follow cloud development, motion and dissipation both during the day as well as at night. The large area coverage permits the user to note storms, fronts, and other pressure systems which may affect his area several days later. Infrared images transmitted via WEFAX have been computer processed so that variations in temperature are indicated as shades of white through grey to black. Each shade represents a unique temperature value.

If we desire to copy satellite signals our first concern is the receiver itself. It is by far the most critical piece, along with the antenna, since if we can not hear the satellite signals, we can not copy them. One can either purchase a commercially assembled receiver capable of copying 135-137 MHz range, modify an existing piece of surplus equipment, add a converter to a general coverage receiver, or build a receiver from kit form. All of the above are capable of providing copy, however, the best results will be obtained with an FM receiver, crystal controlled with a band-width of 20-30KHz.

Since the geostationary satellites remain fixed above us, antenna construction is simplified since no tracking is required. At first a simple dipole antenna should be tried with its exact positioning being changed while receiving for optimum reception. A more elaborate and directional antenna system can be constructed or purchased later on.

RADIOFACSIMILE BROADCAST STATIONS

Explanatory Notes:

1. Facsimile Transmission (F4 emission) frequencies listed are carrier frequencies.
2. Transmission speed is 120 scans/minute unless otherwise noted.
3. Hours that a frequency is in use are shown.
4. Those stations broadcasting daily, but on an intermittent schedule, are indicated by an asterisk (*). A more complete list of FAX Broadcast Station Data is available from U. S.-Government (check Information sheet).

Frequency In KHz	Location	Time on (GMT)	Ident.
3289.5	Bracknell, U. K.	0000-2400	GFA
3357	Norfolk, Va., U.S.A.	2000-1400	NAM
3695.8	Hamburg, F.R.G.	0905-1014	
3713	Rota, Spain	2100-0700	AOK HAM CW2RM
4037.5	Stockholm, Sweden	0000-2400	SAY, SMA
4271	Halifax, N.S., Can.	0000-2400*	CFH
4280	Northwood, U.K.	0000-2400*	MHU
4610	Bracknell, U.K.	0000-2400	GFA
4782	Bracknell, U.K.	0000-2400	GFE
4975	Norfolk, VA., U.S.A.	0000-2400	NAM
5206	Rota, Spain	0000-0800	AOK
5335	Moscow, U.S.S.R.	0000-2400	
6435.55	Northwood, U.K.	0000-2400*	MHU
6901	Stockholm, Sweden	0000-2400	SAY, SMA
6912.5	Washington, D.C., U.S.A.	0500-2000*	KWAF
6918.5	Madrid, Spain	0410-1715*	
7626	Rota, Spain	0000-2400	AOK
7710	Frobisher, N.W.T., Can.	1815-1815	VRC-3
7750	Moscow, U.S.S.R.	0000-2400	
3018	Helsinki, Finland	0040, 0740, 0930	OFA 83
8040	Bracknell, U.K.	0000-2400	GFA
8080	Norfolk, VA., U.S.A.	0000-2400	NAM
8085	Paris, France	0200-2200	
8100	Rota, Spain	0000-2400	AOK
8185	Paris, France	8230-2145*	
8502	Boston, MA., U.S.A.	1607	NIK
8502	Northwood, U.K.	0700-2110*	MHU
8680.1	San Francisco, CA., U.S.A.	0100-2300*	NMC
9203	Bracknell, U.K.	0000-2400	GFE WHF/WFK
9389	Brentwood, N.Y., U.S.A.	0712-1212	WHF/WFK
9440	Honolulu, Hawaii, U.S.A.	0000-2400	NPM
9890	Halifax, N.S., Can.	0316-2300*	CFH
10185	Washington, D.C., U.S.A.	0500-2000*	KWAF
10250	Madrid, Spain	0410-1715	
10865	Norfolk, VA., U.S.A.	0000-2400	NAM
10980	Moscow, U.S.S.R.	0000-2400	
11030	Canberra, Australia	0138-2218*	AXM

7290	US Amateur Facsimile Net	1800-1900 (Saturdays)	K9EUI
28690	International Ham Radio FAX	Daily (JAFA)	(Many JA's)

RADIOFACSIMILE BROADCAST STATIONS

<u>Frequency</u> <u>In KHz</u>	<u>Location</u>	<u>Time on (GMT)</u>	<u>Ident.</u>
11035	Brentwood, N.Y., U.S.A.	0712-1212	WPH/WFK
11086.5	Bracknell, U.K.	000-2400	GFA
12184	Rota, Spain	000-2400	AOK
12201	Washington, D.C., U.S.A.	0500-2000*	KWAF
12260	Paris, France	0700-1830	
12844.5	Northwood, U.K.		MHU
12903	Rota, Spain	0800-2000	AOK
13370	Moscow, U.S.S.R.	000-2400	
13472.5	Washington, D.C., U.S.A.	0500-2000*	KWAF
13510	Halifax, N.S., Can.	0315-2300*	CFH
13667.5	Dakar, Senegal	000-2400	6VU/6VY
14436	Bracknell, U.K.	000-2400	GFE
15950	Moscow, U.S.S.R.	0520-2045	
16410	Norfolk, VA., U.S.A.	1400-2100	NAM
16938	Northwood, U.K.	0700-2110*	MHU
17670	Washington, D.C., U.S.A.	0500-2000*	KWAF

	<u>Test</u>	<u>Schedules</u>
HALIFAX		2220
NORFOLK	Schedule	0000
	Test Chart	1200
WASHINGTON	Test Chart	0500, 1515 1708, 1730
BRACKNELL	U.K. GFA Schedule	Thursday 0922
BRACKNELL	U.K. GFA Schedule	Thursday 0837
PARIS, FRANCE	Test Chart	0845, 1401
ROTA, SPAIN	Schedule Test Chart	0000, 1200 Monday 1900

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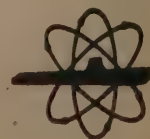
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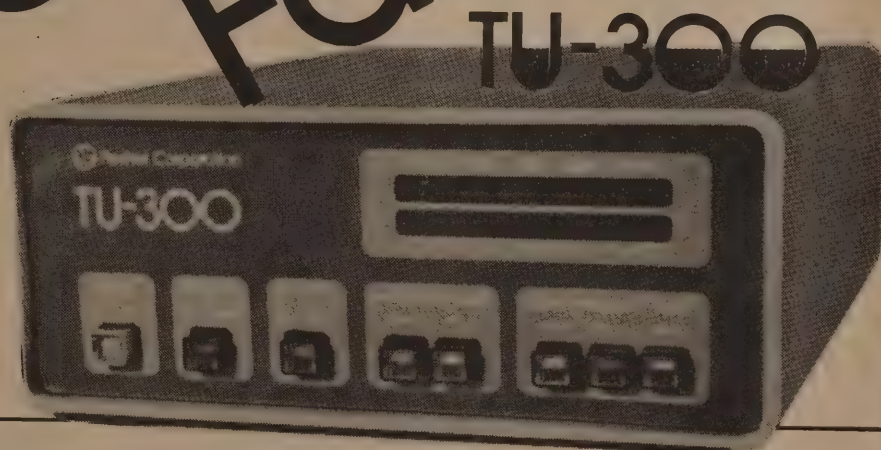
Tel: (212) 372-0349



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Capable of communication rates to 300 baud, the TU-300 is designed specifically for modern high-speed and standard RTTY applications. The TU-300 operates with standard microcomputer, TTY and radio equipment and is TTL and RS 232-C compatible. Controllable by remote, this next generation terminal unit with innovative modular design provides more than six times the conventional amateur data transmission rate using present radio and computer equipment. Featuring three frequency shifts, the TU-300 is the only 300 baud terminal unit offered in easy to construct kit or wired.



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VHF RTTY GROUPS VERY ACTIVE

ASCII AND COMPUTERS EXPAND CAPABILITY

MICHIGAN VHF Rtty is alive and well reports Jack Christilaw of Livonia, Michigan. WD8NIS/R on 146.10/70 Mhz. passes baudot 60 wpm/170 shift signals from Pine Knob area which serves the greater Detroit area. This is the 2nd "Rtty only" repeater in this area! Nearby OHIO Rtty'ers can be heard on 144.89/145.49 Mhz. on the Chardon Ohio Rtty Repeater serving the Cleveland area. Both baudot and ascii modes are used.

The Gridley, ILLINOIS 146.10/70 Mhz. Rtty/Voice repeater is all but dead for Rtty action. A one time busy repeater that linked Indiana with Iowa, the system has lost alot of F2 activity for no apparent reason given. Rtty enthusiasts in the Peoria and Decatur areas report little activity with occasional spurts during DX openings. How about it WA9LRO? Whats going on?

SAN FRANCISCO, California has celebrated their Rtty system's second birthday in April. The "Amateur Communications Society, Inc." is using full regeneration 45.45 baud/170 shift TTY via K6GWE located near the San Pedro Ridge site. Contacts for any further information may be made to WB6EFY or on the repeaters frequency of 147.93/33 Mhz.

Ted Peterson W7WWG is still cranking out his "F-1 Magazine" for the Portland area. OREGON Rtty'ers are on 147.78/18 Mhz. with a link into SEATTLE, Washington area via 220 Mhz. WA7CYP and N7RY have completed and ascii/baudot interface system.

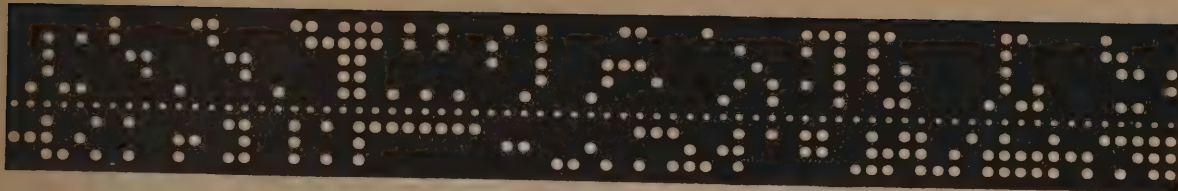
FARTS (yes, thats right) Florida Amateur Radio Teletype Society added a link on 14.095 Mhz. to the 146.10/70 Mhz. Rtty Repeater system says Ed Webb W4FQM. The regenerated, 45 baud 180 watts ERP system is active daily with many users.

PORTLAND, MAINE Rtty can be found on the K1EVU Rtty repeater system located in the Westbrook area with a frequency of 147.75/15 Mhz. ARRL Rtty bulletins are passed daily on the autostart circuit with a special Thursday night picture net. The repeater can be activated and shut down by touch tone pads and is owned and operated by W1UTD and K1EVU. It is an open repeater for Rtty users and welcome to all.

IOWA's central state Rtty Repeater is WB0QDV in Ackley, Iowa. The frequency is on the standard 146.10/70 Mhz. frequency and is a mixture of commercial and homebrew line gear. The repeater is run by Dennis Matura WB0QDV of Applington, Iowa and is serving most of the Cedar Rapids to Marshalltown areas. Users must send two spaces and the letters "xmit" to change the repeater from voice operation to Rtty regenerative.

The STARK RTTY GROUP of Massillion, OHIO is a real activer TTY group. They publish a fine newsletter with alot of neat little ideas in it. One is to save those cold drink cups for rtty parts. Some of the fellas use the local six meter repeater on 52.63 in and 53.63 out.

VIRGINIA TELETYPE SOCIETY "VTS" Newsletters report good activity on the WB4JBJ Repeater at 147.705/105 with a link now to W4PNT/R 147.675/075 Mhz. which is linking Central to Northern Virginia. A further hookup into North Carolina via a 220 Mhz. system was being proposed. A "special Ascii only" Thursday and Sunday time period works out well for them with the Baudot users. Standard tones of 170 shift (Z125-2295) are employed for the Ascii code at 110 baud. Further information can be obtained by writing Larry Lewis at 101 Jane Randolph Road, Forest, Virginia 24551.

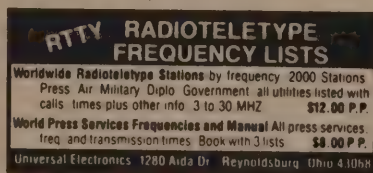


INLAND EMPIRE RTTY NETWORK reports the link with the SCATTS 220 Mhz. Rtty repeater back in April 1981 has been working just great! This Rtty "link" gives very nice coverage in almost all of southern California. The INLAND EMPIRE repeater is located at Running Springs, California with an elevation of 6200 feet. It offers audio and signal regeneration with crystal controlled clocks assuring good print. The antenna used is a Phelps-Dodge Superstation Master antenna mounted literally on a pine tree 100 feet up in the air out in the clear (automated growth feature). It is an open system for all interested Rtty Amateurs with a weekly schedule of activity which includes a Monday night (8 pm.) ARES Net, a Tuesday night (7 pm.) Picture night, a Wednesday night (7 pm.) group meeting conducted by WA6GEV (Pix) and a Thursday night special "mode" access encounter. More information may be obtained by sending SASE to Inland Empire Rtty Network, 3804 Bronson Street, San Bernardino, CA. 92405. Thanks to Herman Chairez WA6FUO for all the information.

The Iowa/Illinois (Quad-City) BI-STATE VHF RTTY SOCIETY is still going strong on their Blue Grass, Iowa Rtty Repeater with nightly activity picking up all the time. They have a regenerative system at 146.10/70 Mhz. with a mixture of users on good ole hardcopy and computerized printers. W9RI John Greve of Rock Island, Illinois recently made a fantastic demonstration of the TRS-80C Color Computer and how it can be used with specialty modes of Amateur Radio such as CW/Rtty and SSTV. The highlight was Color SSTV reception and audio cassette storage techniques taken from a 28 Mhz. SSTV source. John is an active member of the TTY group and made the demonstration to the local Quad-City Computer Club which also meets monthly. His activity with computers (Digital Group, TRS-80 and TRS-80C) has brought interest to Air Force MARS recently as they are establishing SSTV and Computer communications within their HF network.

The Chicago based CARRS Rtty Group, 1549 North Cicero, Chicago, Illinois-60651, had a great display at the January "Wheaton, Illinois" hamfest with a large display of Rtty Artwork. Their fine repeater is now computer controlled (WB9WIC/R) at 144.71/145.31 Mhz. For more information contact Paul Mayers WB9ZHG, President of CARRS.

AMRAD (Amateur Radio Research and Development) corporation in McLean, Virginia headed by W4RI, N4GA, W3HWN, K8MMO, WB4APR, WB4JFI, WB4NFB and WB5MMB have been active in "packet and spread spectrum" communication testing with permission from the FCC for sending and receiving the computerized programs via high speed rates. The WD4IWG Repeater is active 24 hour per day with voice, Rtty and autopatch communications. Frequencies are 147.81/147.21 Mhz. out. A computerized "bulletin board" is available using an S-100 via WB4JFI at 703-734-1387 and accepts 110-300-450 and 600 baud ascii. Callers should use the Bell 103-compatible modems.



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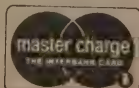
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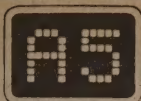
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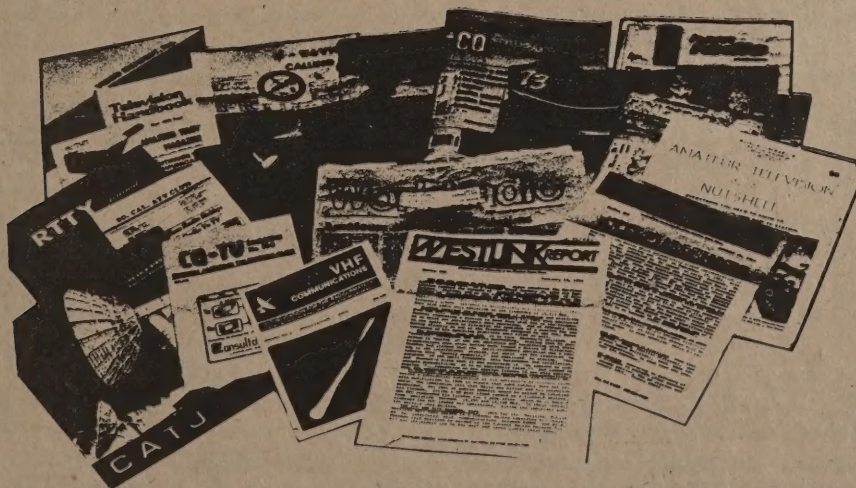
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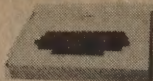


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Looking for somebody to get on ATV with in the SW Missouri area. Al Stone W6NJZ Route 1 Box 59, Noel, Missouri 64854 (Also in the Madison, Wisconsin area-contact N9IF David Martin)

Want to get into FSTV! To do it I have to sell my Rtty station; Infotech M75 demodulator (video), M-150 Keyboard, 170/425/850 shift at 60/66/75/100 wpm. Add your monitor for silent RTTY! This system was over \$650 new, sacrifice \$350 or trade for ATV transceiver/camera. Randy Nelson WBØVHB, Winfield, Iowa. 52659 (UPS shippable-all in good working condition)

SSTV Keyboard (Model HCV-3KB-1) made by James Thomas \$275.00, mint condition with top cover never removed. E. Omohundro KBØWG, 314-638-1679, 241 Marilyn Estates, St. Louis

Can someone help me hookup my ICOM 720A to the Robot 400 with simple language and sketches? Wrote ICOM and Robot but no results. Please write to Herb KB2BB (See late callbook)

Wanted; schematic, manual, etc. for JFD Electronics model #600 B/W Camera. Tom Workman KØTW, Route #9, Box 688, Tucson, Arizona 85743 Phone area code 602-682-7562.

Looking for a Robot 70 Monitor. WB8NLM-CT Huth, 146 Schonhardt St, Tiffin, Ohio 44883

For sale-Venus SS2 SSTV-Camera/Monitor, also CID Venus B/W Camera-mint shape with all manuals, James Thomas SSTV Keyboard, Radio Shack Ascii encoder, includes all schematics, SASE please to Mel K8ZQM, 43 Westwood Drive, Fremont, Ohio 43420.

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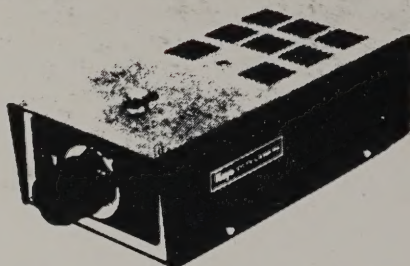
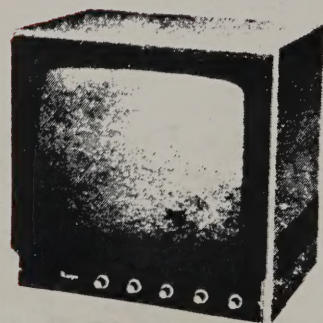
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